The Construction of Care in Computed Tomography

Exploring Care from the Perspective of Patients and Radiographers

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Abstract

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Title: The Construction of Care in Computed Tomography.
Exploring care from the perspective of patients and radiographers.

Keywords: Patient care, care, computed tomography, CT, diagnostic radiographers, patients.

Purpose: Patient centred care and the 'patient voice' are core components of UK healthcare policy and practice guidance. This study explores how care is perceived and experienced within the high technology environment of CT.

Methods and Materials: A two-phase approach of Critical Discourse Analysis (CDA) and adapted Grounded Theory (GT) methodology using semi structured interviews, was used to obtain primary data from CT radiographers and patients. Recruitment and data collection were performed at a 1200 bed teaching hospital over a 6-month period.

Results: The radiographer patient relationship and the radiographer's role in providing care within CT are complex and multifaceted. Both patients and radiographer's perceive CT imaging to be an integral part of the overall patient care and treatment pathway. As such, the act of being imaged is perceived as a care process and while image acquisition is recognised as a task orientated and technical process, the human element of providing care is cognitive, dynamic and responsive to individual need. Importantly, patient confidence in the care received was influenced by the radiographer's ability to build a trusting relationship and display technical competence and this in turn facilitated active compliance resulting in a technically accurate examination. Despite previous literature suggesting that the technical environment created a barrier to patient care, patients within this study confirmed that radiographers provide care commensurate to the nursing ideals represented by the 6C's (Care; Compassion; Competence; Communication; Courage; Commitment).

Conclusions: A co-constructed model of care encompassing both technical components and patient-centeredness has been identified. This model promotes a new vision of patient centred care based on care perceptions within the high technology environment of CT.

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Finally, I would like to dedicate this thesis to the memory of my family, taken too soon but continuing to drive me to achieve all that I can in the time that I have.

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Glossary of Terms

Angiography – A medical imaging technique used to visualise the inside, or lumen of blood vessels. Images are achieved via the injection of IVCM (see glossary of abbreviations) directly into the blood vessels and imaging the vessels using x-ray procedures.

Categories - Higher-level concepts under which analysts group lower-level concepts that then become its subcategories. Categories are sometimes referred to as themes. They represent relevant phenomena and enable analysts to reduce combine and integrate data (Corbin and Strauss 2015).

Coding – Process of labelling and identifying concepts which stand for interpreted meanings contained within data.

Concepts - Words that stand for interpreted meaning of data, the conceptual name enabling researchers to group “raw data” with other “raw data” that share a common meaning or characteristic, such as a bird, kite, and plane that have flight in common (Corbin and Strauss 2015).

Contrast Extravasation – Extravasation of contrast is a well-known complication of imaging studies performed with intravenous contrast media and refers to the leakage of contrast media from the normal intravascular compartment into surrounding soft tissues. Most extravasations cause minimal swelling or erythema; however, skin necrosis, ulceration and compartment syndrome may occur with extravasation of large volumes of contrast (Belzunegui et al. 2011)

Constant Comparative Analysis – A method of qualitative data analysis involving the continuous comparison of data against other data.

Flesch-Kincaid Readability Score - readability tests designed to indicate how difficult a passage in English is to understand.

Nuclear Medicine – An imaging modality that uses radioactive tracers which can be administered to examine how the body and organs function, for example, the kidneys or heart. Certain radioisotopes can also be administered to treat particular cancers, e.g., thyroid cancer.

NVivo – A qualitative data analysis software programme designed to organise and manage data.

Radiology – The medical speciality that uses a variety medical imaging techniques and modalities to diagnose and, in some cases, treat disease. The term also refers to the overarching clinical environment in which diagnostic imaging is performed.

Radiography – the process or occupation of taking x-ray, magnetic resonances or ultrasound images to assist in medical examinations.

Radiographers – Regulated professionals with the Health and Care Professions Council (HCPC). Radiographers undertake a wide range of diagnostic examinations or therapeutic procedures dependent upon the clinical area in which they practice.

- **Diagnostic Radiographers** – Work in clinical imaging areas which include plain film X-ray, Computed Tomography (CT), Magnetic Resonance Imaging (MRI), Ultrasound (US), Nuclear Medicine, Mammography and Angiography.

- **Therapeutic Radiographers** – Are responsible for the planning and delivery of accurate radiotherapy treatments.

Realistic Evaluation - is an evaluative critical research methodology concerned with establishing what works for whom, how, and in what circumstances.

Reflexivity – a tool for self-critique used to explore and expose self-values, biases and preconceptions in a continued and cyclical evaluation of the impact the researcher has upon the resultant research.

Saturation – Referring to theoretical saturation whereby the point is reached during analysis whereby no new codes occur in the data.

Schema Theory – A Cognitive learning theory concerned with how the brain structures and uses knowledge to achieve tasks.

Theoretical Sampling - Theoretical sampling is a process of data collection for generating theory. During the process the researcher simultaneously collects, codes and analyses data and decides what data to collect next and where to obtain it, in order to develop a theory as it emerges from the data.

Ultrasound – An imaging modality that uses high frequency sound. This technique is increasingly used in obstetrics, including monitoring throughout pregnancy, gynaecology, abdominal, paediatrics, cardiac, vascular and muscular-skeletal problems.

Glossary of Abbreviations

CDA – Critical Discourse Analysis (CDA) is a research methodology used to critique and analysis the construction and influence of language and text on social behaviour and expectations.

CT – Computed Tomography (CT) is a diagnostic imaging modality that uses x-rays to acquire detailed cross sectional and 3 dimensional images of the entire body.

CPD – Continued Professional Development.

CTPA – Computed Tomography Pulmonary Angiography (CTPA) is a specific CT procedure using an injection of Intravenous Contrast Media to demonstrate the presence of blood clots within the pulmonary arteries (PE).

DoH – Department of Health (DoH). UK government department that supports ministers in leading and developing the NHS and social care.

EI – Emotional intelligence (EI) is the capacity to be aware of, control, and express one's emotions, and to handle interpersonal relationships judiciously and empathetically.

GT – Grounded Theory (GT) is a is a systematic research methodology involving the construction of theories through methodical gathering and analysis of data.

HRA – Health Research Authority (HRA) is an organisation whose main purpose is to protect and promote the interests of patients and the public involved with health and social care research.

HCPC – Health and Care Professions Council (HCPC) is the governing body which provides professional registration for radiographers.

IP – In-patients (IP), term used to describe patients who are experiencing overnight hospital stays and who do not return home or to their place of normal residence after the CT examination.

IPA – Interpretive Phenomenological Analysis (IPA) is an approach to qualitative research which aims to offer insights into how a given person, in a given context, makes sense of a given phenomenon or experience.

IVCM – Intravenous Contrast Media (IVCM) is an Iodine-based material injected into a vein (intravenously) to enhance CT images.

MRI – Magnetic Resonance Imaging (MRI) is a diagnostic imaging modality that uses strong magnetic fields and radio waves to create detailed diagnostic and functional imaging data of the entire body.

NHS – National Health Service (NHS) is the publicly funded national healthcare system for England and one of the four National Health Services for each constituent country of the United Kingdom. It is the largest single-payer healthcare system in the world.

OP – Out-patients (OP), term used to describe patients who attend the CT department from home and return home or to their normal place of residence after the examination.

PACS – Picture Archiving Communications System (PACS) is a medical imaging technology which provides economical storage and convenient access to digital images and diagnostic data from multiple imaging modalities.

PE – Pulmonary Embolism (PE) is a blood clot within the pulmonary arteries.

SCoR – Society and College of Radiographers (SCoR) is the trade union and professional body for radiographers and all non-medical members of the workforce in diagnostic imaging and radiotherapy in the UK. It is responsible for their professional, educational, public and workplace interests.

SPECT- CT – Uses diagnostic imaging data from two imaging modalities, Single Photon Emission Computed Tomography (SPECT) and Computed Tomography (CT) which are fused or merged together to provide precise information to show organ function, tumour identification and disease spread.

Chapter 1: **Background and Introduction**

1.1 Introduction

> *"The apparatus used may grow in the scope of its automation, but the care of the patients can never be placed within the function of any mechanical or electrical progression and must remain in the human hands of the radiographer"*
>
> *(Chesney and Chesney 1978)*

Computed Tomography (CT) imaging is regarded as a fast paced, high technology environment, where patient interactions occur as snapshots in time within the overall care and treatment pathway of the patient (Murphy 2009; Strudwick et al. 2011). Radiographers often perform complex examinations within a relatively short period of time and with limited prior knowledge of the patient and their medical and psychological condition (Bolderston et al. 2010). Quality Watch, a research group who provide independent scrutiny to the quality of services provided to NHS patients, stated in 2014 that they were unable to report on the impact allied health professionals have had on the quality of care within the NHS because there are no substantial data available to support such a report (Dorning and Bardsley 2014).

During the development of this study it was established that in order to understand and report on the quality of care radiographers provide during a CT examination, we must first establish how care is perceived, delivered and experienced by those directly involved in the CT examination (i.e. patients and radiographers). Of equal importance is the need to evaluate how influential bodies such as the Government, the regulatory Health and Care Professions Council (HCPC), and the Society and College of Radiographers (SCoR) define and expect care to be delivered. Determining the level of harmony or discord between the perceptions of the different groups is necessary to identify where interventions may be needed to ensure that care delivery is of the highest possible standard, meeting the needs and expectations of the patient whilst achieving diagnostic excellence.

The following research was approached from a pragmatic, constructivist perspective, taking influence from symbolic interactionism (see Chapter 3). The perspective recognises that individual realities and actions are constructed and mediated via exposure to external experiences and through interactions with others. This is a perspective that recognises that both patients and radiographers will have individual views on what constitutes care and how it is provided even though they are part of a wider social grouping. This becomes significant within the healthcare setting where the concept of being person focused is regarded as central to high quality care delivery and staff wellbeing (Department of Health 2015a; Department of Health 2015b).

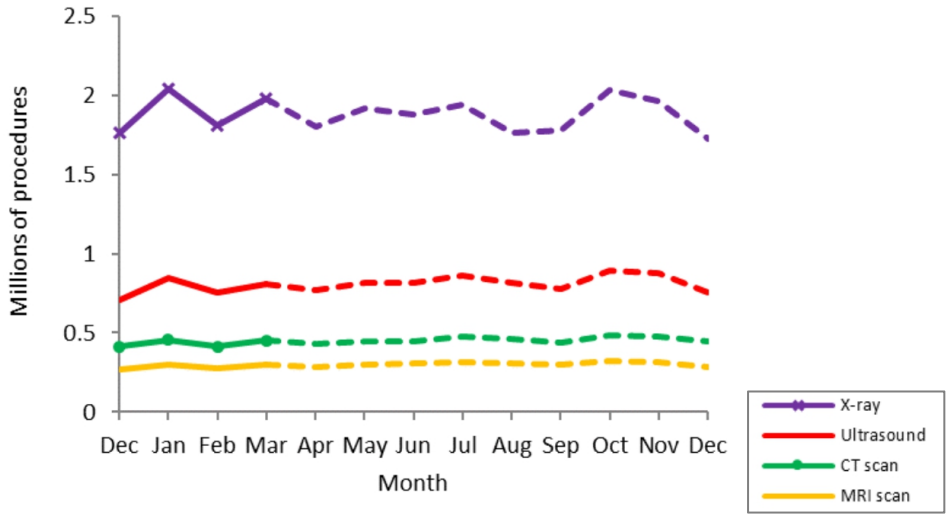
Whilst the main body of this thesis follows an adapted Grounded Theory (GT) methodology, the study was conducted using a bi-phased approach. Phase 1 began with a critical discourse analysis (CDA) of Government and legislative documentation, which aimed to expose how influential governing bodies perceive and expect care to be delivered. However, in keeping with the evolving nature of a qualitative study, a change in my own theoretical questioning, which had emerged as a consequence of the knowledge gained during the CDA, resulted in a methodological shift towards GT methods used in Phase 2. The second phase of the study aimed to establish how care is perceived, delivered and experienced from the perspective of both the patient and radiographers involved during a CT examination. A detailed account of the evolution of the study is included in Chapter 2 (section 2.1).

1.2 Background

CT has been described as the long established ‘mainstay of emergency and routine diagnostic cross sectional imaging’ (Clinical Imaging Board 2015). The clinical applications of CT for both the critically ill and ambulant patient are widespread (Clinical Imaging Board 2015). These include detailed fracture clarification; complex coronary artery and organ perfusion imaging; oncology diagnostics and follow up; acute trauma imaging and at the opposite end of the spectrum assessment of a multitude of benign conditions

(COMARE 2014). Between January and December 2018, 43.1 million imaging tests were reported in England (Figure 1.1), of which 5,024,010 were CT examinations (NHS England and NHS Improvement 2019a: 4).

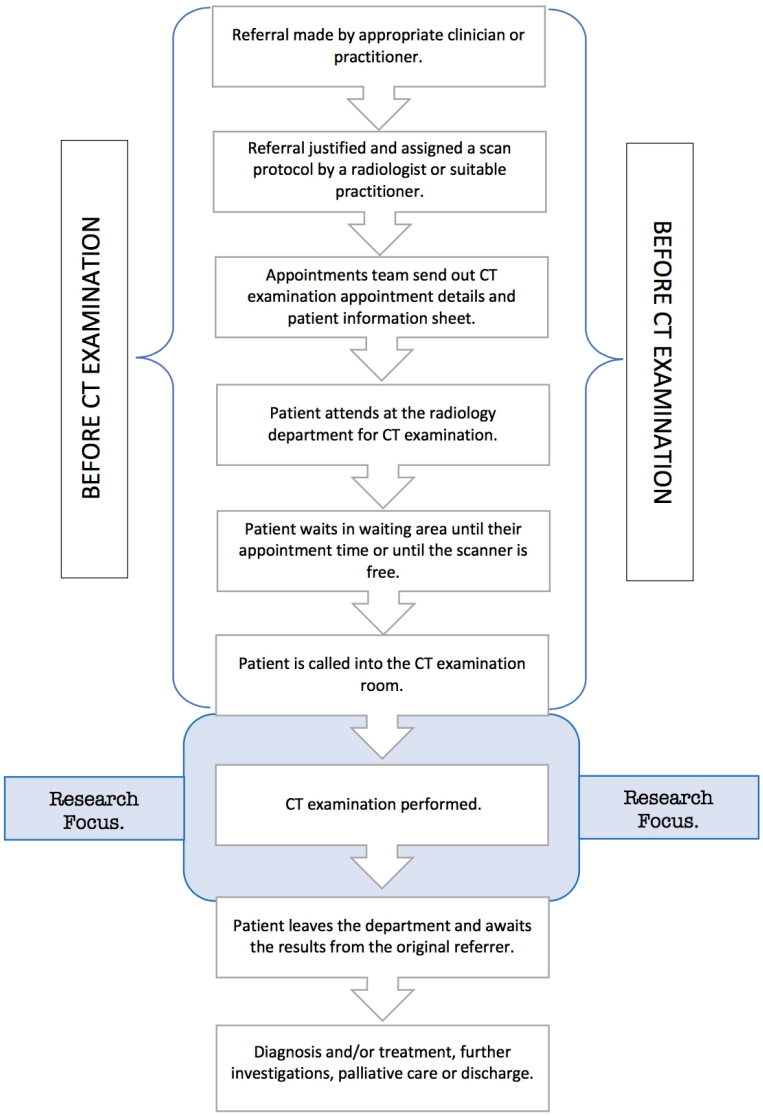
Figure 1.1 NHS Imaging activity in England Dec 2107-Dec 2018 (NHS England and NHS Improvement 2019a: 5).



Multiple factors have continued to drive the exponential growth of CT imaging across the world (COMARE 2014; Dick et al. 2016). The rapid development of CT data acquisition technology, specialist imaging applications and post processing powers of CT workstations, combined with additional integrated tools located within picture archiving and communication systems (PACS), have increased the popularity and potential of CT imaging across the spectrum of clinical specialities (COMARE 2014; Clinical Imaging Board 2015). Consequently, CT has replaced a range of conventional diagnostic examinations such as barium enemas and angiograms (COMARE 2014; Dick et al. 2016) and fast acquisition times make the modality suitable for paediatric imaging without the use of sedation and/or general anaesthesia (COMARE 2014). Further, multidisciplinary team working within the arena of cancer diagnosis and treatment is increasing survivorship and directly impacting on CT demand, service growth and popularity (Clinical Imaging Board 2015).

As patients are referred to the radiology department from an array of referral sources, referral pathways and timeframes can be varied between institutions and departments within each institution. Whilst the radiographers within this study performed a range of CT examinations on patients from the full range of referral sources, recruitment of the patient population was limited to out-patients who may or may not have had experiences of CT examinations performed in the emergency or in-patient setting. The pathway of a typical out-patient referral to the CT department of the host institution is illustrated in Figure 1.2 and demonstrates where this study is situated within the patient's diagnostic pathway.

Figure 1.2 The outpatient CT examination from referral to results – The patient's diagnostic pathway.



The research presented within this thesis is focused on the technical element of the CT examination and the care provided by the radiographer and experienced by the patient during a typical CT examination (Figure 1.3). As Figure 1.2 demonstrates the actual CT examination is a single element of the patient's diagnostic pathway. However, in order to address and evaluate the construction of care during a CT examination it was important for the study to remain focused upon the experiences and interactions that occurred between the patient and the radiographer within the actual CT clinical environment and not those experienced by the patient before or after the examination.

Figure 1.3 Brief outline of a typical CT examination as performed at the host site.

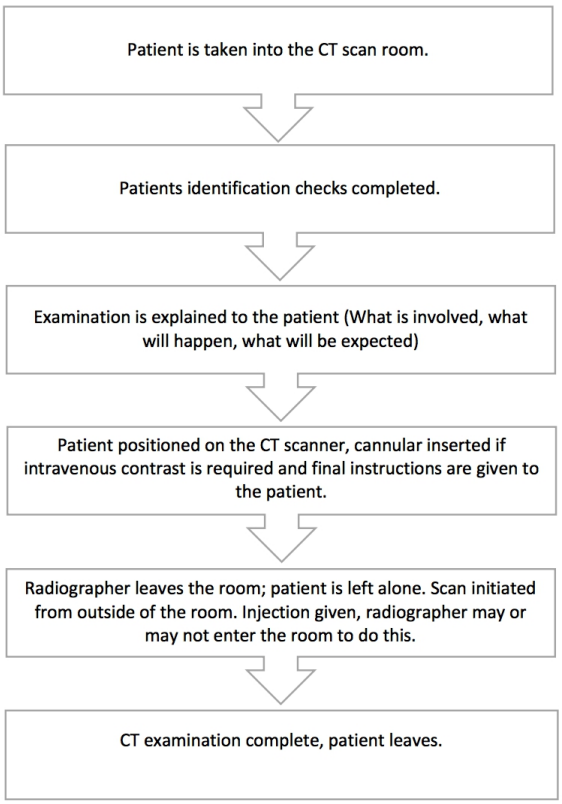


Figure 1.3 constructs and presents the CT examination as a technical and non-patient focused process and these are the assumptions that this study was developed to explore and challenge.

1.2.1 Radiography: A Caring Profession?

Within the published literature, diagnostic radiographers have been portrayed as task orientated providers of transient care (Strudwick et al. 2011). They are perceived to function as facilitators of care rather than care providers within diagnostic and treatment pathways, performing procedures and producing images which are viewed by the patient as a means to an end in the quest for a diagnosis (Murphy 2009; Strudwick et al. 2011). Supporting this perception, Hayre et al (2016) observed diagnostic radiographers in practice and found evidence to suggest that radiographers actively dehumanise the patient in preference of maintaining examination efficiency. He reported that radiographer research participants supported the conjecture that 'plain film' radiographers are working as operators on an efficient production line. Radiographers justified these actions and behaviours by maintaining that patients were often impressed by the speed at which examinations took place (Hayre et al. 2016). However, no evidence was presented to address whether patients were satisfied with the level of care they had received during the swift interactions. Instead, Hayre et al (2016) presented the assumption that patients were valuing waiting times and efficiency above other components of 'care'. Unfortunately, what constituted these 'components of care' from the patient or radiographer perspective was not addressed. Hayre et al (2016) speculated on the perceptions of the patient using data provided by radiographers and attempted to reinforce their assumptions by citing Bolderston et al (2010) who suggested that patients do not expect care during diagnostic imaging procedures. However, the evidence presented by Bolderston et al. (2010) is limited to the perceptions of therapeutic radiographers and therefore may hold reduced value when considering care within the diagnostic environment. The presented interpretations do, however, suggest that other professional groups, including those closely aligned professionally, may perceive diagnostic imaging as a non-caring environment. It was also noted that Bolderston et al (2010) collected data via focus group interviews. Whilst focus group research may promote active discussions, it is documented (Beitin 2012) that participants within a specific group may adjust their responses and information

disclosures to facilitate the construction of a persona they wish to portray to the group and to the interviewer (i.e. a 'caring professional' or 'compassionate individual'). Consequently, it must be considered that the participants within Bolderston et al's (2010) study may wish to portray themselves as holistic, patient focused, caring professionals but what is actually experienced in practice by the patient may be perceived very differently. Bolderston et al (2010) emphasised that more research is needed into the radiotherapists' perception of caring in order for the profession to develop a true ontology of caring that will enable them to practice, teach and value the care they offer to patients. Despite the fundamental differences in the scope of practice between diagnostic and therapeutic radiographers, it can be argued that this is an area of research that needs to be addressed across the entire radiography workforce.

1.2.2 Care in a High Technology Environment.

Diagnostic and therapeutic radiography departments are some of the most technological environments to which patients are exposed. Within diagnostic imaging, patient interactions often occur as snap shots within the overall care pathway and the application of strict radiation protection legislation means that many patients find themselves alone during image acquisition and therapeutic procedures (Murphy 2001; Strudwick et al. 2011). There has been speculation that the physical barrier that is placed between the patient and radiographer during imaging procedures may impact upon the level of care that is provided to, and perceived by, the patient (Murphy 2001) and a perceived dichotomy between technology and the application of care, based on traditional nursing models, has manifested across healthcare literature (Barnard and Sandelowski 2001; Bull and FitzGerald 2006; Murphy 2006). For example, the work of Locsin and Purnell (2015) speculated over the '*palpable tension'* that exists between *'the need to preserve humanness through caring nurturance and the demands of the technology for attention'* (Locsin and Purnell 2015: 50). Consequently, theoretical threats to traditional paradigms of care continue to manifest yet remain unsubstantiated.

Radiography as a profession is reliant on technology and it can be argued that without sophisticated imaging technology, the professional radiographer would not exist (Bolderston et al. 2010). Research by Bolderston et al (2010) has shown that radiographers actively choose to be part of the radiography profession based on the appeal of the technology, but this is balanced with a desire to provide care. This is reflected within a study by Bull and Fitzgerald (2006) who explored nursing care within the operating theatre. During their study Bull and Fitzgerald (2006) reported that nurses who worked with in high technology environments were said to display a *'profound desire to care'* (Bull and FitzGerald 2006: 7) even though the actual time spent with conscious patients was very limited.

Barnard and Sandelowski (2001), challenged the validity of the presumed barriers that exist between technological advances and humane care. They argued that it is not technology per se that affects the relationship between person and machine, but the context and way in which the technology is used that holds more significance in the wider social and healthcare setting (Barnard and Sandelowski 2001). Barnard and Sandelowski (2001) also suggest that the polarization of humane care and technology has been used negatively to maintain and command a distinct professional nursing identity. This is reinforced by nurses in practice who emphasise that it is the caring aspect of their role which gives them the identity of 'real nurses' (Bull and FitzGerald 2006).

Barnard and Sandelowski (2001) further argue that research must move away from demonising the relationship between technology and care. Attention should instead move towards conceptualising technology focussing on the human interaction with technology and the values and meanings which individuals and groups in different contexts attribute to the technology (Barnard and Sandelowski 2001). Barnard suggests that it is nurses alone who are ideally placed to bridge the gap between technology and care through embracing philosophical approaches to research within the field (Barnard 2002). I would, however, contest this and instead propose that radiographers are in an equal, if not more dominant, position to conduct

research associated with working in high technology areas and the human experience of care within these environments.

In a later publication, Barnard (2007) goes on to suggest that in line with general society, nurses have in practice embraced technology. However, as a profession, nurses have been slow to engage with research investigating the impact that technology has had on the moral and ethical dimensions of professional practice, society, and human experience (Barnard 2007). Radiography by its very nature is strongly connected with technology and technological advancement and it is proposed that Bernard's reflections are applicable to imaging and therapy practice. However, much of the existing radiography evidence base places focus on imaging techniques and disease detection with little attention being paid to human experience. The research presented in the following chapters has been conducted to address the identified gaps within the evidence base relating to human experience in clinical practice and the impact of the technological environment on our (patient and radiographer) perception of care.

1.3 Research Questions and Aims

1.3.1 Main Research Question

How is care constructed within the high technology diagnostic imaging environment of Computed Tomography (CT)?

The aim of this research is to evaluate how care is perceived, delivered and experienced by those directly involved during a diagnostic CT examination (the radiographer and the patient) and develop a theory of care as constructed in the specific context of the CT clinical environment. To be able to answer the main research question, the presented research addresses 6 interrelated sub questions shown in Table 1.1.

Table 1.1 Sub questions and associated aims.

	Question	Aims
Sub question 1:	How is care constructed within government, legislative and professional documentation?	• *To critique and explore the expectations of care provision from the perspective of those who dictate practice; government organisations, policy makers and the professional bodies specific to radiography and AHP clinical practice.*
Sub question 2:	How do CT radiographers construct, perceive and deliver care?	• *To identify what constitutes care from the perspective of diagnostic radiographers performing CT examinations.* • *To determine any influential factors which may determine the level of care CT radiographers are able to provide* • *To identify how CT radiographers define and perceive their role within the patient's diagnostic, treatment and care pathway.*
Sub question 3:	What factors influence and contribute to the CT radiographer's construction of care?	
Sub question 4:	How do CT patients construct, perceive and experience care?	• *To identify what constitutes care from the patient perspective.* • *To establish whether patients receive care that meets with their needs and expectations.* • *To identify where the provision of care can be improved and to highlight positive experiences of care.* • *To establish whether patients regard CT radiographers as caring professionals.*
Sub question 5:	What factors influence and contribute to the CT patient's construction of care?	
Sub question 6:	How does the constructed model of care within the diagnostic imaging environment of CT fit with existing literature and models of care as defined within legislative and professional documentation?	• *To identify if the perception of care as constructed by patients and radiographers meets with the UK Government and the professional and regulatory bodies expectations relating to care provision.* • *To compare and evaluate the constructs of patients and CT radiographers against existing literature.*

1.4 Summary of Chapters

Chapter 1: Introduction and Background - This chapter provides an introduction to the perceived position of CT and patient care within healthcare imaging and a summary of the proceeding thesis chapters.

Chapter 2: Theoretical foundations - This chapter provides an overview of study development and evolution, an introduction to the research study and overview of the methodological underpinnings and perspective observed throughout the research.

Chapter 3: Phase 1 Document Review – A scoping review of the literature, initiated lines of theoretical questioning focused around professional and legislative documentation and how they dictate how healthcare staff, including radiographers, should behave and operate when providing care to the public. An overview of the resultant review trialling an adapted method of critical discourse analysis (CDA) is presented together with the data extracted from additional literature sources which was used to define and validate the arguments and interpretations presented. The aim of the review was to explore how radiographers are being advised to provide care. Although CDA was rejected as the overarching methodology for this research, the data has been purposely included to keep any influences and impact the review had on subsequent data interpretations and constructions explicit within this thesis in keeping with the Corbin and Strauss (2015) GT methodology.

Chapter 4: Phase 2 Methodology – Grounded Theory – This chapter begins with a brief introduction to the history of GT and begins to describe the basic tenets of a GT study and how the method was used in practice.

Chapter 5: Data Collection Methods - Presents the data collection methods used which were applicable to both participant populations.

Chapter 6: Building the Theory Part I – Data Analysis - Outlines the initial stages of coding and concept identification and the development of categories.

Chapter 7: Building the Theory Part II – Integration- This chapter elaborates on the analytical strategies followed and details the integration of concepts and categories into major categories.

Chapter 8: Literature Review – This chapter presents a comprehensive literature review focused upon lines of theoretical questioning exposed during data collection and analysis that required further investigation and clarification.

Chapter 9: The Grounded Theory – This chapter brings together the constructed analyses and findings presented in chapters 6 & 7 with the additional knowledge and data collected during the comprehensive literature review (Chapter 8) to expose the core category and resultant theory construction.

Chapter 10: Conclusions – This chapter presents the final synopsis of the study including reflections, study limitations and future research recommendations.

Chapter 2: **Theoretical Foundations**

The main aim of this research is to explore how care is perceived, delivered and experienced by those directly involved during a diagnostic CT examination, the radiographer and the patient, and to develop a theory of care as constructed in the specific context of the CT clinical environment. This chapter will describe the development of the research together with the theoretical perspectives that have underpinned and guided this thesis. The aim of this chapter is to expose the evolving research journey and to explain why the bi-phased approach using Critical Discourse Analysis (CDA) and adapted Grounded Theory (GT) was necessary to facilitate a full evaluation of the construction of care within the CT clinical environment.

2.1 Evolution of the Study

My clinical background as a diagnostic radiographer has influenced the practical approach taken during the development and execution of this research (See Appendix 1). The approach taken aimed to ensure that the knowledge gained from this study would be directly applicable to those involved in the research. The intention was for it to be embraced as a potential catalyst to initiate change and influence improvements within the clinical environment.

The resultant thesis is far removed from the proposals made at the inception of my research journey. As a CT radiographer developing and partaking in a pioneering radiographer led Cardiac CT angiography service (Reid et al. 2016), I began to question the advanced practice roles we were undertaking (e.g. the administration of heart rate reduction medication and glyceryl trinitrate (GTN); and increased accountability for imaging acquisition choices previously defined by a Radiologist or Cardiologist) and the drive for patient centred practices in the NHS (Department of Health 2015b). I questioned whether such role extensions, whilst increasing service efficiency and promoting new ways of working to address staffing constraints (Department of Health 2000b; Department of Health 2000a), were actually acceptable to patients and meeting their expectations relating to the care and treatment

pathways they were experiencing. A scoping literature review of patient centred care and advanced practice in radiology uncovered a large gap in the evidence base relating to patient care and more specifically within my own area of interest, the CT clinical environment. Consequently, before consideration could be given to the concept of care in advanced practice, there was a more pressing question that needed to be addressed: *what is care in CT?*

As NHS healthcare is dictated and controlled by Government legislation, performance targets, clinical guidance and professional policy, I identified that in order to evaluate and understand care within the clinical environment there was first a need to critique and explore the expectations of care provision from the perspective of those who dictate practice. Therefore, the initial phase of this research used CDA to address the question:

How is care constructed within government, legislative and professional documentation?

2.1.1 Phase 1: Critical Discourse Analysis

Phase 1 of the study was built upon pragmatic logic that brings together knowledge and action and applies theory into practice (Chamberlain-Salaun et al. 2013). The pragmatic ontology denotes that something is true if it allows us to accomplish our objectives and that an important indication of the truth of a belief or theory is that it works in practice (Greetham 2006). Phase 1 took a critical stance to evaluate policy documentation from the main perspective of myself as an advanced practice CT radiographer. From this perspective, my assumption was that policy and national drivers are underpinned and based upon up to date evidence and that the findings from the review would define an evidence-based model of care to which radiographers as a professional group were expected to adhere.

Within the context of this research, CDA was used to provide a method of data analysis and interpretation which extended beyond a critique of discourse into an explanation of how the discourse of professional and

legislative documentation could influence the interpretation, perception and expectations of care delivery and experience within CT (Fairclough 2015: 6). In the field of social research there are many differing approaches to CDA (Wodak and Mayer 2009; Fairclough 2015) and identifying a single systematic approach to the CDA became a complex task compounded by the way experts from varied disciplines differed in operationalising and conceptualising the method (McCloskey 2008). In keeping with my own pragmatic logic, I initially developed a structured plan for the CDA influenced by the work of James Paul Gee (Gee 2011; Gee 2014) and Jäger & Meyer (Jäger and Maier 2009). The guidance and 'tools' (Gee 2011) offered by these authors appealed to my radiographer self as they enabled the development of structured data extraction tool (Table 2.1) and an analytical framework (Table 2.2) which I wrongly thought would guide my research in a logical and comfortable manner. Following a trial of the data extraction tool and analytical framework (Table 2.1& Table 2.2), it was found that each was too restrictive and failed to support a fluid, meaningful and explanatory analysis of the documentation. The failure of this approach was to become one of the defining moments of my research journey where I accepted that I needed to let go of my positivistic and objective roots as a radiographer and embrace a more interpretivist qualitative mind set.

Table 2.1 Initial CDA data extraction tool adapted from James Paul Gee (Gee 2011; Gee 2014) and Jäger & Meyer (Jäger and Maier 2009)

Initial Data Extraction

Title			
Publication date			
Source			
Author			
Purpose			
Type of publication			
Justification for Analysis			
Typical forms and Characteristics			
Layout			
Use of illustrations			
Use of Collective Symbols			
Argumentation			
Vocabulary (vernacular/non-vernacular)			
Other typical elements			
	Page	**Frequency**	**Distribution**
Key words			
Key Phrases			
Key Topics			
Key Subtopics			
Absent topics			

Table 2.2 Initial CDA analytical framework tool adapted from James Paul Gee (Gee 2011; Gee 2014) and Jäger & Meyer (Jäger and Maier 2009)

Key word, theme, phrase or subtopic to be analysed.

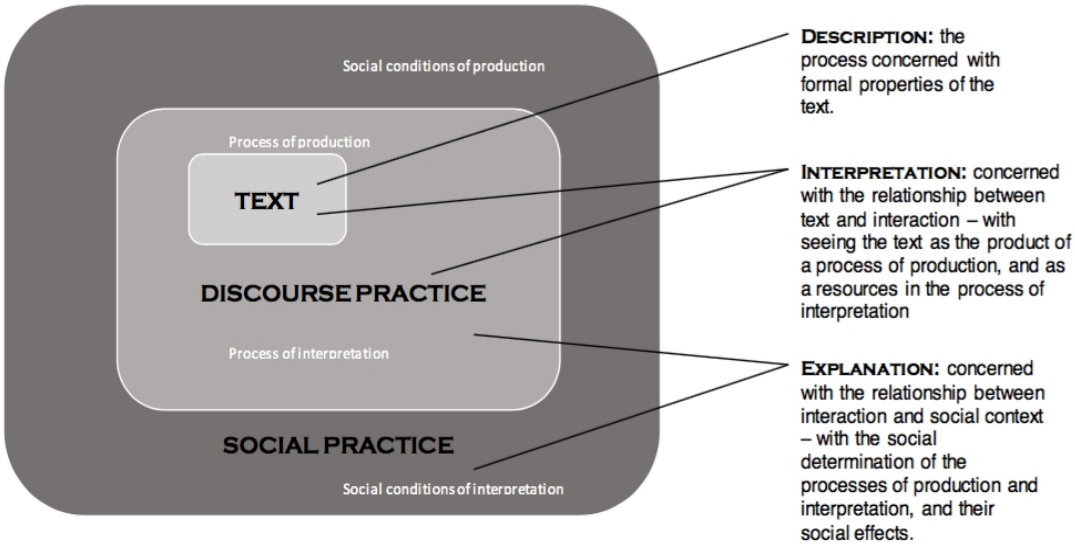
Seven Concepts Influenced or Enacted Though Languge.

Tools of Enquiry : How does each help build or influence the seven concepts?	**Significance**	**Practices**	**Identities**	**Relationships**	**Politics & Ideology**	**Connections**	**Signs Systems and Knowledge**
Situated Meanings							
Social Languages							
Intertextuality							
Figured worlds							
"D"iscourse							
"C"onversation							

Additional sub-questions leading from analysis

The CDA approach championed by Norman Fairclough views discourse as a multidimensional concept that should be explored from three separate yet interwoven perspectives: discourse as text; discourse as practice; and discourse as social practice (Fairclough 1993; Fairclough 2015). Whilst Fairclough does not provide a formula for the production of an 'ideal' CDA, nor makes any claim to being the ultimate source regarding CDA, he does provide a more fluid, three stage approach which is specifically useful in the study of social change (Figure 2.1) (Fairclough 2015: 58).

Figure 2.1 Fairclough's CDA model adapted from Fairclough (2015:58).



Fairclough's approach to CDA takes the epistemological stance that discourse is socially constructive. Social construc***tivism*** is often used simultaneously and interrelated with social construc***tionism***. However, advocates of social construc***tivism*** (Charmaz 2000; Young and Collin 2004; Mills et al. 2006a; Mills et al. 2006b; Ültanir 2012; Charmaz 2014; Higginbottom and Lauridsen 2014) argue that cognitive processes manifest at an individual level, making meaning making and the interpretation of the world, relative and subjective. This contrasts with construc***tionist*** theories which suggest reality is constructed as a consequence of being part of a social group, via the interactions and experiences encountered within these social groupings (Crotty 1998; Young and Collin 2004).

In the context of this study, the discourse defined within the reviewed documentation, is not viewed solely as a way of representing the world or, more specifically, the provision of care. Through the purposeful construction of significant elements of the text, I believe that the discourse has the power to create and influence practice and expectations (Fairclough 1993; Fairclough 2015).

Fairclough (1993) identifies three predominant constructive effects of discourse: 1. Discourse contributes to the construction of what are variously referred to as social identities; 2. Discourse helps to construct social relations between people; and 3. Discourse contributes to the construction of systems of knowledge and belief (Fairclough 1993). Fairclough's model of CDA also resonates with the elements of constructivist theory which acknowledges that the researchers own perception of reality and past experiences will influence the interpretation of the text and must remain explicit. There is also recognition that readers of any given text will interpret the text differently depending on their social position (e.g. patient, radiographer, clinician, relative or a combination of one or more positions) (Fairclough 2015).

Following the CDA (Chapter 3), I began to question the authenticity of *The NHS Constitution* in relation to the document's relevance to radiography practice and the care radiographers provide to patients. Whilst aiming to raise standards, *The NHS Constitution* (Department of Health 2015b; Department of Health 2015a) and National Institute of Clinical Excellence (NICE) guidance (National Institute for Health and Clinical Excellence 2012) may contain unachievable idealistic models of care when their application is considered within radiology. Consequently, failure to meet defined care expectations may result in staff demoralisation and sub optimal radiographer patient relationships. I identified that we, as a profession, need to challenge the nursing focused models of care championed by *The NHS constitution* and underpinning documents and look towards the development of a more relevant care evidence base. As a consequence of the outcome of the document review, the focus of this research began to shift. It became evident that before the radiography profession could fully understand and report on

the quality of care radiographers provide, or establish how the radiography model of care relates to *The NHS constitution* and guidance documentation, there was a requirement to determine how care is perceived, delivered and experienced by those directly involved in the imaging examination (patients and radiographers).

As the scoping literature review and CDA had revealed a distinct lack of evidence in relation to care in radiography and radiography practice, my prior assumptions relating to practice guidance being evidence based was challenged. With no primary discourse available to evaluate relating to care in practice, the need for an alternative methodology to explore the construction of care from the perspective of those who have experience of the CT clinical environment was sought. Whilst pragmatist theory underpins and supports healthcare research and the development of evidence-based radiography practice, my approach following the CDA needed to move towards the consideration of the existence of multiple realities dependent on the stance from which a phenomenon is viewed. In the context of this study, whilst each participant had experience of being within the CT clinical environment, each interpreted the experience from differing and/or multiple perspectives influenced by external experiences and beliefs. A theoretical position which is explained and influenced by symbolic interactionism (Data box 2.1) and a perspective presented by Crotty (1998:62) as being *'pragmatism in sociological attire'.*

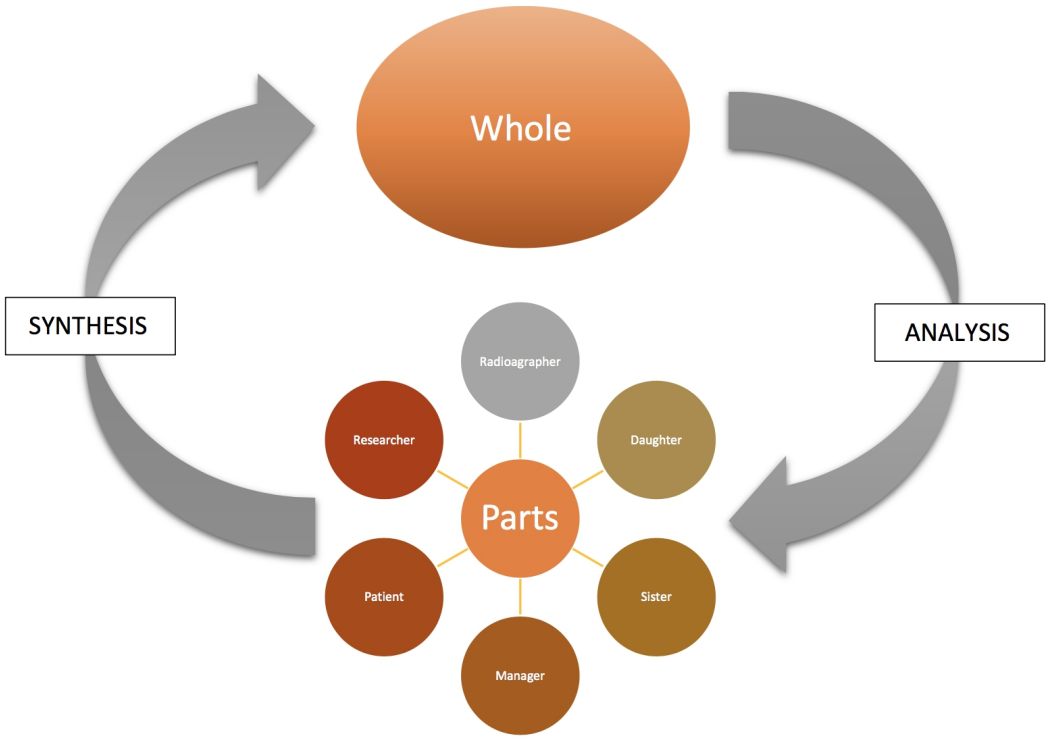
Data box 2.1

Symbolic Interactionism
'a theoretical perspective derived from pragmatism that assumes that people construct selves, society, and reality through interaction. Because this perspective focuses on dynamic relationships between meaning and actions, it addresses the active processes through which people create and mediate meaning. Meanings arise out of actions, and in turn influence actions. This perspective assumes that individuals are active, creative, and reflective and social life consists of this process.' *(Bryant and Charmez 2007: P610)*

2.1.2 Hermeneutic Deconstruction: A Tool for Self-Reflection

Before undertaking Phase 2 of this study, I was challenged to deconstruct my own preconceptions and understanding of care and the care that I provide to patients as a CT radiographer (Finlay 2003: 3). Hermeneutic reflection (Figure 2.2) was used as a tool to critique and deconstruct my own perceptions and expose the intersubjective elements of my life which could impact on, and influence, the developing research (Finlay 2003: 3).

Figure 2.2 Hermeneutic reflection (adapted from Smith et al 2009 and Finlay 2003).



Whilst reflective practice has become an integral part of professional radiography practice and continued professional development (CPD) (Kinsella 2010), using hermeneutic principles as a technique to deconstruct my own interpretation of care, and to expose the social and professional factors and experiences that influence my practice, was an extremely alien, and at times uncomfortable concept, providing insights which were difficult for me to accept - a common, but enlightening, consequence of reflexivity (Finlay 2002). Challenging myself to embrace the process of critical self-reflection (Finlay 2003: 4) led me to realise that my practice may not be as

equitable and compassionate as I would like to have believed, and that judging the practice of others before considering 'why' they do what they do is not acceptable. I have also come to realise that my external experiences of the healthcare system as a daughter and sibling have had a significant impact on my interactions with both specific staff and patient groups. Through hermeneutic reflection I realised that my expectations of what I would want for my own family, against the perceived level of care I am able to provide, or choose to provide as a radiographer, are at times more conflicting than I first perceived. If a dichotomy like this exists within myself as a person who has experienced care provision from two, sometimes conflicting, perspectives, a presumption was made that an even wider cavern may exist between the care that patients want and need during a CT examination, and what radiographers believe is the care a patient requires in order to produce the best diagnostic images possible. Whilst this study upholds that the reality of care, as constructed by radiographers, is based upon 'what works for them' in practice, what works in practice to achieve a task may not translate into care from the patient's perspective. Therefore, it was essential for the patient voice to be heard to enable a true evaluation to be made as to whether radiographers are actually providing care, or merely achieving the task of producing diagnostic images. Using and adapted form of GT, Phase 2 of this research sought to answer the questions:

How do CT radiographers construct, perceive and deliver care? What factors influence and contribute to the CT radiographer's construction of care?
How do CT patients construct perceive and experience care and what factors influence and contribute to the CT patient's construction of care?

2.1.3 Phase 2 Development

Phase 2 of the study was conducted using an adapted form of Corbin and Strauss's Grounded Theory method (Corbin and Strauss 2015). Semi structured interviews, using both patient and radiographer participants, enabled the research to go beyond a narrative account of how care is experienced to include the identification of contextual factors which impact and explain the construction of care within the CT clinical environment.

Phase 2 of the study upheld that research participants are not passive receptors of knowledge (Ültanir 2012) and that the development of understanding relies on an active interaction with a subject or experience. It is believed that I, as a researcher and radiographer, and both the patient and radiographer research participants, will have preconceptions of what care is and should be, formulated through exposure to historical, cultural and social influences and the interpretation of past experiences at an individual level. This perspective is again underpinned by constructivist theory which recognises knowledge as being temporary and socially and culturally mediated (Ültanir 2012). This perspective also suits the NHS healthcare environment which, as an institution, is in a constant state of flux and restructuring and, at a practice level, faces constant transformation as research alters equipment, defines imaging techniques and modifies treatment pathways. A further significance is that the constructivist stance embraces the notion that individuals involved with this research will have multiple 'selves' (Mills et al. 2006a). For example, a radiographer may also be a researcher, a relative, or even a patient. Individual reality will therefore be constructed and influenced through what has been taught, learnt or experienced within the context of each social group to which an individual belongs. However, to make sense of each reality, experiences will be interpreted cognitively at an individual level, and through the lens of the varying 'selves' depending on the context of each situation.

Work by Emel Ültanir (2012), although focusing on constructivist theories in education, can be applied to the healthcare setting. Citing John Dewey's (1859 – 1952) theory that knowledge is never a true representation of reality, and that the relationship between knowledge and reality is the result of individual and social experiences, Ültanir (2012) argues that a true understanding of the world is cognitively constructed through the interaction between what is already believed, and events, ideas and activities with which a person comes into contact. As a result, it is proposed that what the individual radiographer believes to be true will be more significant than a taught object reality (Murphy 2001; Ültanir 2012). It is believed that whilst radiographers may be taught elements of patient care during their formal training, and be exposed to strict professional codes of conduct and professional legislation detailing how patients should be cared for, what radiographers actually believe constitutes care within the clinical setting, and what they are actually able to provide, may be quite different. In the same sense, what radiographers may believe the patient wants and needs within the context of what they have been taught, or have practiced for many years, may be different to what patients actually want or need as the construction of care from the patient point of view may be very different. This phase of the research therefore aimed to establish how individuals within each group construct the reality of care within the CT clinical environment and why.

Constructivist theory and the influence of the symbolic interactionist stance led me to recognise that individual research participants were self-aware and able to view themselves from the perspective of others. This allows them to conduct themselves in differing ways and in accordance with the varying situations in which they find themselves (Heath and Cowley 2004). Taking the stance that the CT examination occurs within a complex environment in which experienced events are comprised of a fusion of unpredictable factors, it was assumed that each participant would respond to events and situations in a varied and complex manner. It was therefore essential to include multiple perspectives of experiences encountered within the CT clinical environment. Of equal importance was the need to recognise that in order to understand a human response to a defined situation, it must be placed within a personal

and larger social, psychological, political, temporal, economic and cultural context (Corbin and Strauss 2015). Although the contextual factor or conditions of an experience will not determine action and interaction, they offer explanation and understanding as to why events occur and expose factors which facilitate or constrain a person's ability to act under certain circumstances (Corbin and Strauss 2015). Contextual factors helped to explain patient behaviour and the affects this may have on the patient professional relationship, aiding the identification of influences which help to explain why radiographers provide and construct care in the way in which they do. During data collection, a conscious effort was made to include lines of questioning which allowed the participants to provide relevant data to contextualise any events disclosed. This helped to ensure that both patient and radiographer behaviour could be explained within the context in which the events occurred rather than being merely judged from an external perspective.

Whilst attempting to define a suitable methodology to evaluate the construction of care within CT, Interpretive Phenomenological Analysis (IPA), realistic evaluation and Grounded Theory (GT) were all considered as potential methodologies to take the research forward:

2.1.3.1 Interpretive Phenomenological Analysis

Interpretive Phenomenological Analysis (IPA) is a qualitative method of enquiry concerned with how individuals make sense of major life experiences (Eatough and Smith 2008; Smith et al. 2009). More specifically IPA is interested in what happens when the everyday flow of lived experience takes on a particular significance to the individual (Smith et al. 2009). IPA is informed by three theoretical positions; Phenomenology, Hermeneutics, and Idiography (Smith et al. 2009). It is the idiographic nature of IPA that reduced the suitability of this methodology to the proposed study. IPA promotes homogenous sampling (Smith et al. 2009), and whilst this would be suitable to a study of a specific patient group such as those living with dementia, it appears to be less suited to the study of a diverse population such as the CT

patient group as a whole. Consequently, whilst this approach would provide rich accounts of the lived experience, IPA was felt to be too limiting and unable to directly address the question of which factors influence the understanding and perception of care and care giving during a CT examination. It was also considered that results from this method might be perceived by the target audience (radiographer's and practitioners) as being too descriptive and narrative.

2.1.3.2 Realistic Evaluation

Realistic evaluation, is an evaluative critical methodology concerned with establishing what works for whom, how, and in what circumstances(Rycroft-Malone et al. 2010). Using a methodological framework, realistic evaluation attempts to demonstrate an unequivocal causal relationship between programmes and outcomes (Pawson and Tilley 2013). Following the conceptual formula of context + mechanism = outcome (Rycroft-Malone et al. 2010; Pawson and Tilley 2013) the method proposes that *'causal outcomes follow from mechanisms acting in context'* (Pawson and Tilley 2013: 58). Whilst this method has been used successfully by Rycroft-Malone et al (2010) in the evaluation of protocol-based care, the method requires the researcher to hypothesise and test the propositions prior to data collection. As the factors affecting the way patients and radiographers define and model care are unknown, this method was not suitable to take the research forward.

2.1.3.4 Grounded Theory

The aim of GT is to develop an explanatory theory of social processes studied within the environments in which they take place (Starks and Brown Trinidad 2007). GT offered a series of systematic, flexible guidelines for the collection and analysis of qualitative data (Charmaz 2014) and facilitated the construction of theories and concepts which are grounded in the data themselves (Charmaz 2014). The GT model of enquiry advocates heterogeneous theoretical sampling to facilitate the exploration of a multi-dimensional experiences or phenomena (Starks and Brown Trinidad 2007). The methodology was therefore suited to the diverse demographic of the CT

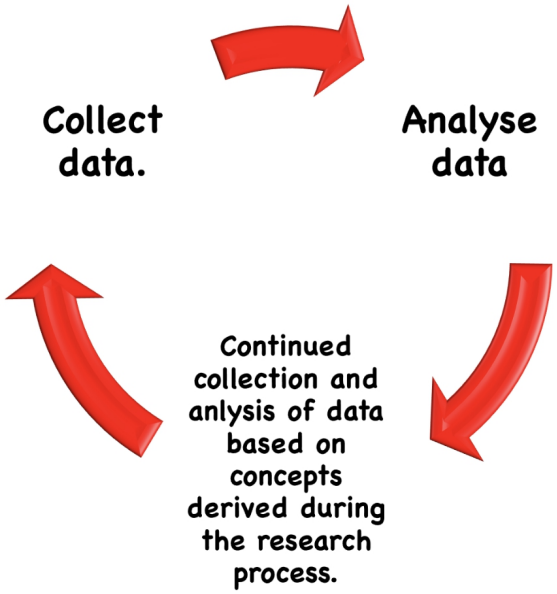
patient population whilst enabling the inclusion of CT radiographers who share the same experience of the CT examination from an alternate perspective and standpoint. Using semi structured interviews for data collection and rejecting traditional positivist assumptions of the existence of an objective social world in favour of an interpretivist paradigm, the study was built on the assumption that radiographers and patients construct their own understanding of care within the CT clinical environment. GT therefore offered a methodology suited to phase 2 of the study but also provided a framework which complemented the methodological underpinnings of Fairclough's CDA model. As the approach offered by Corbin and Strauss (2015) embraces the introduction and utilisation of existing knowledge into theory development, this particular approach enabled the knowledge gained from Phase 1 (CDA) to be brought directly into my own interpretations and theory constructions.

The GT approach to qualitative research as defined by Corbin and Strauss (2015) is underpinned by both pragmatic and symbolic interactionist assumptions (Chamberlain-Salaun et al. 2013; Corbin and Strauss 2015). However most significant to this study is that the method embraces contemporary constructivist thought (Corbin and Strauss 2015). When seeking to explore the construction of care within the CT environment, GT recognises that the interaction between radiographer and patient affects the individual constructs and interpretations of that experience. The Corbin and Strauss method also recognises that the interaction between the researcher and research participants, and/or any formal taught knowledge or personal events experienced by any party involved with the research process, will also affect and influence the interpretation and construction of a specific reality within the specific context in which it is experienced.

GT provided this study with a comparative and interactive approach to data collection and analysis, enabling the emergence and construction of theories built from empirical data supplied directly by the research participants (Charmaz 2000; Bryant and Charmaz 2007b; Charmaz and Henwood 2008; Charmaz 2014; Corbin and Strauss 2015), and relevant literature sources

(Corbin and Strauss 2015). The GT method, unlike methods advocating the collection of vast amounts of unanalysed and unanalysable data, utilises the methods of theoretical sampling (see section 4.3) and constant comparative analysis (see section 6.2.2) in a cyclical process (Figure 2.3) which actively engages the researcher with the data whilst delivering focused and meaningful data collection and analysis until saturation (see section 4.3.1) is achieved (Corbin and Strauss 2015). These processes ensured that the study remained focused upon answering the research question of, *how is care perceived, delivered and experienced within the CT clinical environment?* whilst exposing relevant data to explain why care is constructed and experienced in the way that it is.

Figure 2.3 The relationship between data collection and analysis (Corbin and Strauss 2015: 8).



The GT method facilitated the generation of empirical concepts which were taken directly from the data supplied by those who have the specific knowledge and/or experience of a CT examination. As evidence based radiography needs to be underpinned by robust and relevant evidence, it was essential that the chosen methods of data collection and analysis provided data that had the potential to inform changes in practice and guide professional education (Bolderston et al. 2010). It is believed that the generation of narrative accounts of the CT experience alone would fail to

provide context specific evidence to influence and inform practice within CT. Instead it is the generation of explanatory theory which can be used to influence and change practice that made the GT method suitable to explore the construction of care within CT.

2.2 Insider Perspective

In qualitative research it is common for researchers to be part of the professional or social group that they are investigating (Moore 2012). Whilst the term *inside researcher* is applicable to my situation as a CT radiographer and regarding the environment in which the research was conducted (Moore 2012), I have no experience of a CT examination from the perspective of the patient. Consequently, prior to approaching the site as the lead researcher, the potential impact of being an inside researcher who works as a CT radiographer within the host Trust was considered and debated as part of an ongoing reflexive process (see section 2.3 Reflexivity). As a result, an active measure taken to limit the inherent bias associated with being an inside researcher was the conscious decision to remove myself from the clinical environment before and during data collection, minimising the impact of institutional and relational influences during this period.

Approaching research from the inside perspective carries both positive and negative influences. Whilst access to the site and potential participants was made more fluid by the existing relationships built within the host site, the familiarity of both elements are known to make it more difficult to objectively question taken for granted aspects of practice (Asselin 2003; Sheldon and Sargeant 2009: 174). I was conscious that as an inside researcher investigating a subject about which I am passionate, I could fail to interpret the world around me independently and from the perspective of a researcher rather than a radiographer (Sheldon and Sargeant 2009: 170). It was therefore essential for data collection to include a range of perspectives from CT radiographers with experiences of working outside of the host site. These external perspectives enabled me to challenge and question my own understanding and interpretations of care provision and to construct an

understanding of care from accounts taken directly from the participants. I was then able to use my knowledge as a radiographer and source appropriate literature to build, support and further question my own interpretations.

As my interview skills developed and my sensitivity to the disclosure of taken for granted concepts and practices grew, I identified the importance of prompting participants to expand on specific events when an assumption was made that I knew what they were trying to convey or that my understanding of an event was the same (Journal entry 2.1).

Journal entry 2.1 The need for elaboration to reduce inside bias.

Journal Entry
Date: 3-8-18 *She even expressed that if she had been faced with some of the situations that she'd had of late then she would have crumbled as a newly qualified radiographer. In hindsight it would have been good to have asked about specific incidents or experiences where this had happened. A presumption was made that I knew what she meant by this and whilst I have shared similar experiences my interpretations of such situations may be very different. I need to base my interpretations on evidence from participants not my own prior assumptions.* *I need to remember going forward with the interviews that when a participant mentions their practice (a taken for granted concept) in the context of what they do, I should ask them to tell me about those experiences or specific situations so that I can gain a full understanding of events that happened and what contributed to the events panning out in a way which they did. Finding out more about the impact of external factors and the way situations are dealt with would also have been beneficial and would have added more context to the analysis in keeping with the GT methodology and the philosophical stand point whilst reducing the impact of me as an inside researcher.*

Prior knowledge of the area and subject under evaluation also brought advantages into data analysis. Having extensive knowledge of the processes and equipment used during a CT examination enabled a greater understanding of aspects of the examination patient participants were trying to explain through actions and lay terms alone. Prior knowledge also helped to ensure I remained sensitive to the patient's interpretations of their experiences (Sheldon and Sargeant 2009). Without this knowledge, some of the disclosures made during interviews using actions alone would have been

very confusing and raised the potential for misrepresentation (Sheldon and Sargeant 2009). An example is evidenced in Data box 2.2.

Data box 2.2

Supporting Data
"*[pointed at arm simulating injection]* The feelings and that have been exactly the same whether it's done [pause, again believed to be simulating injection] when you go in or whenever it is, I think probably. I think for me it would probably be more beneficial to have it done before you *[demonstrated moving into scanner with hands]"* *Patient 3*

With the radiographer participants, it was hoped that a known researcher would lessen the likelihood of the radiographers feeling that their practice was being questioned by an external body (Asselin 2003). There was, however, a strong possibility that the professional working relationship would influence the information that radiographers were willing to disclose (Beitin 2012; Brinkmann and Kvale 2015). Equally, there was a risk that radiographers may have felt too comfortable and disclosed information which they would later regret (Brinkmann and Kvale 2015). A risk in such circumstances, where participants feel comfortable with the relationship they have with the interviewer, is the disclosure of sensitive and potentially unethical practices (Sheldon and Sargeant 2009). It was made clear during the consent process that whilst the interview would remain confidential, the disclosure of potentially harmful practices are subject to professional accountability and would therefore need to be reported (Sheldon and Sargeant 2009).

Initially the radiographer interviews were quite daunting as they occurred with colleagues who were well known to me. After an initial period of awkwardness compounded by some heightened feelings of self-consciousness, the situation became more relaxed and the interview flowed more freely and became more comfortable. It was recorded within an early journal entry that the initial questions asked were a little awkward and rigid, however as the conversation settled the interview soon evolved into a normal

conversation. With experience and the growth of confidence the interviews became more fluid and transformed into an enjoyable enlightening experience Journal entry 2.2.

Journal entry 2.2 Feelings experinced during intial interviews.

Journal Entry
Date: 03-07-17 *<u>Initial thoughts post interview:</u>* *Initially the interview was quite daunting partly I believe because it was with a colleague that I knew very well. After the initial awkwardness both myself and the interview participant quickly became more relaxed and the interview flowed more freely and became more comfortable. After the initial first couple of questions which were a little bit awkward and a little bit rigid for want of a better word, the conversation soon flowed, and the interview became more relaxed.* Date: 21-07-17 *<u>Initial thoughts post interview:</u>* *As with the previous interview the participant was known to me and the interview began with the same feelings of nerves and trepidation from both participant and myself. It was noted that when answering the first question regarding her role as a radiographer within CT scanning the participant appeared to downplay her role and answer in a very abrupt and matter-of-fact way. This could be due to nerves at the beginning of the interview. I feel that it may be beneficial to the interview to have more questions which will act as a way of gaining information but also to put the radiographer at ease. I found that I did not stick to the interview schedule and had to return to one of the questions which I had missed out which may have made the interview appear a little disjointed.* *It is also noted that when answering the second question with regards to what is done during a typical IV contrast examination the answer came across as being quite a technical process, whereby protocols are placed first and the answers given were very specific and almost like a student clinical assessment answer. This may be partly due to the participant giving an answer that she thought I wanted to hear as a radiographer and partly due to the fact that we had not relaxed into the interview. This may mean that I could be missing out on some very useful information if I don't allow myself and the participant to relax into the conversation.* *(**Addition 03-10-17:** The technical process of a CT scan is known to me so I may be wasting valuable interview time. Questions should focus more on what the radiographers believe constitutes care during the technical process and examination).*

The inside researcher perspective was advantageous to the process of theoretical sampling (see section 4.3) as the level of experience and background relating to the radiographer participants was known. This meant that suitable participants were selected for interview at the appropriate point

within the study to ensure that lines of theoretical questioning were followed up in a systematic and purposeful manner (Corbin and Strauss 2015). The advantage of having direct unlimited access to a diverse group of CT radiographers meant that data collection remained natural and fluid (Asselin 2003) rather than being a forced process within a limited time frame. The recommendations of Moore (2012), who cautions against sampling based on the knowledge that the chosen participant will agree with the perspective of the researcher rather than being selected based upon the theoretical relevance the potential participant has regarding the subject under evaluation, were considered during radiographers' recruitment. To limit the introduction of bias associated with Moore's concerns, data were continually compared against participants who were not well known such as a locum and radiographers who were new to the host site. This also brought external perspectives into the research.

2.3 Reflexivity

Reflexivity has been used throughout this study as a tool for self-critique and to explore and expose my own values, biases and preconceptions in a continued and cyclical evaluation and to assess how both myself, and the social environment in which the research took place, influenced the interpretations of data presented in this thesis (Sheldon and Sargeant 2009: 166). Consequently, context has been added to my own knowledge claims, and the influences and potential power interplay that may exist between myself, as an inside researcher, and the research participants has remained transparent (Oelson 2005).

Reflexivity itself has different variants stemming from the varied research traditions (Finlay 2003: 6). As this chapter highlights, navigating my way through the mine field of theoretical perspectives resulted in a tussle between methodological choices and perspectives. Within Corbin and Strauss's approach to GT it is accepted that the researchers' interpretations of a situation are as much a part of the research process and subsequent data analysis as those of the research participants (Corbin and Strauss 2015).

The approach detailed within *Basics of Qualitative Research* (Corbin and Strauss 2015) maintains that sensitivity is achieved via varied interactions between the researcher, the literature, personal experience, professional knowledge and the adoption of a robust analytical process which involves constant researcher reflexivity. When discussing the significance of reflexivity, Hesse-Biber (2007) cites a definition used by Mann & Kelly (1997) whose work explored the emergent feminist epistemologies of the mid 90's (Data box 2.3).

Data box 2.3

Supporting Data
'the recognition that all knowledge is affected by the social conditions under which it is produced and that it is grounded in both the social location and the social biography of the observer and the observed' *(Mann & Kelly, 1997:392 cited in Hesse-Biber 2007:326)*

It is widely acknowledged that being a member of a specific professional group, or working in a specific organisation, will introduce bias into the interpretations of meaning relating to the research area under evaluation (Costley et al. 2010). Remaining reflexive with regard to the influence and impact one's own position may have within the research site or peer group, and the interpretation of data provided, was achieved via the generation of reflexive memos and journal entries (Charmaz 2014; Corbin and Strauss 2015). To be truly beneficial to data analysis, reflexive practice needed to extend beyond being mindful of the influences I may have had on the data supplied by participants and the interpretations I assigned to that data. Reflexivity became a mindset used during the research which continually questioned self-behaviour, research practice, and the potential impact the research may have upon practice and behaviour within the host CT department (Kinsella 2007; Kinsella 2010; Charmaz 2014; Corbin and Strauss 2015). The benefits of approaching the research with a reflexive stance ensured that the knowledge I extracted from the research participants and the professional literature and policy documentation was continually

affirmed, contested and constructed via a continued pragmatic dialogue between the learning which had occurred during all elements of the research journey and my own experiences as a diagnostic CT radiographer (Kinsella 2010). This ensured that theory development went beyond the confines of technical imaging practice as defined by objective scientific evidence and discourse (Kinsella 2010), into a new area of qualitative knowledge relevant to the actual clinical practice experienced and constructed by CT radiographers and patients.

2.4 Chapter Summary

This chapter has outlined the theoretical development and methodological underpinnings of the wider research study. Whilst the main body of this research has been guided by an adapted version of the Corbin and Strauss approach to GT (Corbin and Strauss 2015), phase 1 of the research used an adapted form of Fairclough's model of CDA to explore the construction of care from the perspective of government and legislative text producers, and more specifically, those who dictate radiography practice within the NHS. The following chapter (Chapter 3 Phase 1: Document review) will provide a more detailed overview of the CDA used to address the question:

How is care constructed within government, legislative and professional documentation?

Chapter 3: **Phase 1: Document Review**

This chapter provides an overview of the critical discourse analysis (CDA) which was conducted to address the question:

How is care constructed within government, legislative and professional documentation?

The aim of the CDA is to critique and explore the expectations of care provision from the perspective of those who dictate practice; government organisations, policy makers and the professional bodies specific to radiography and Allied Health Professional (AHP) clinical practice. Chapter 3 describes the CDA methods followed, inclusive of document selection, data analysis and an overview of each of the selected documents. This chapter goes on to expose and make explicit the knowledge, preliminary themes and analytical interpretations made during the CDA that influenced the wider GT study development and guided the direction and content of the theoretical sampling deployed during Phase 2 of this thesis. The chapter concludes with a presentation of the relevant elements of the CDA which are considered alongside additional supporting literature, and which have influenced the GT interpretations of the participant data included in Chapters 6 & 7 and the resultant theory presented in Chapter 9.

3.1 Background

This research study takes the stance that any construction of care within CT will be formulated and influenced via the collation of taught knowledge, life and practice experiences, and exposure to external influences such as the media. In the case of professional healthcare practice, this includes professional documentation, legislation and peer reviewed publications. *The NHS Constitution* details the principles, values, rights and responsibilities of the NHS, making explicit to the public, patients and staff what can be expected with regards to quality care and service provision (Department of Health 2015a; Department of Health 2015b). Underpinned by professional and regulatory body documentation (National Institute for Health and Clinical Excellence 2012; HCPC 2013; The Society and College of Radiographers

2013; HCPC 2016), the principles of care defined within *The NHS Constitution* aim to inform the care culture of the NHS. However, it is unclear what impact this documentation has on societal expectations of care and the patient-radiographer relationship or whether the principles, as described, are fully applicable within high technology imaging departments.

Since completion of this preliminary review, additional clinical guidelines (The Society and College of Radiographers 2018b; The Society and College of Radiographers 2018c) and CT specific promotional guidance (The Society and College of Radiographers 2017) have been published by the Society and College of Radiographers relating to consent, Patient, Public and Professional partnerships in Imaging and Radiotherapy, and the role of the radiographer in CT. Whilst the additional documents have been purposely excluded from this section of the thesis as they did not influence any interpretations made during the early development of the overall study, their relevance and influence to practice are brought into discussions within later chapters. As this review uncovered the foundations from which the main GT study developed, making changes to the original review would provide a false representation of data interpretations made during that specific period of the research journey. The production of a true GT study is an iterative and evolving process (Strauss and Glaser 1967; Charmaz 2006; Corbin and Strauss 2015) and therefore a decision was made to present this review in this manner to keep the research journey, and potential influences of the data collected, explicit to the reader. The results of the original document review were accepted for poster presentation at UK Radiological and Radiation Oncology Congress 2017 (UKRCO 2017). A copy of the poster can be viewed in Appendix 2. It must be remembered that the interpretations presented were preliminary and interpreted from the perspective of a single CT radiographer.

3.2 Document Selection

Professional practice within the NHS is guided by government policy and professional documentation. It is for this reason that documents were selected on the basis that they had potential to influence professional practice relating the provision of care to NHS patients. A scoping literature review highlighted that due to the ambiguity of their titles, documents relevant to the review may not be revealed during online data base searches. To ensure that documents were not overlooked, hand searches of the public databases of organisations which produce official documentation to guide radiography and wider healthcare professional practice and patient care were undertaken. The search included publications from Department of Health (DoH), National Institute for Health and Care Excellence (NICE), The Health and Care Professions Council (HCPC), and the Society and College of Radiographers (SCoR). Inclusion of databases which have open public access was important to the study as I felt it would be advantageous for the documents under evaluation to have the potential to influence the provision and expectations of care from the perspective of both staff and patients. A full table of inclusion and exclusion criteria, together with justifications for the decisions, can be viewed in detail in Table 3.1.

Thirteen potential documents were identified from the initial search. The introductions and preface of each were read to allow for further exclusions to be made based on the document's relevance to the question: *How is care constructed within government, professional and legislative documentation*? The full results of this phase of the search can be viewed in Table 3.2.

Table 3.1 Document review: inclusion & exclusion criteria.

Inclusion	Exclusion	Justification
Publications from the years 2010 - 2015	Publications from before 2010. (unless utilised to bring historical context to the discourse under analysis)	The NHS has been in a state of constant change and flux over the past decade. Documentation representing previous government visions and ideologies have now been superseded and may not accurately represent present day perceptions and expectations.
Documents published by Government or other official institutional and legislative bodies that represent positions of power and influence practice and change within NHS healthcare system in England. This includes: • Department of Health (DOH) • NHS England. • NHS Improving Quality • National Institute for Health and Care Excellence (NICE) • Royal College of Radiologists (RCR) • Society and College of Radiographers (SCoR) • Monitor • Care Quality Commission (CQC) • Health & Care Professions Council (HCPC)	Documentation published by official bodies that represents and influences Scotland, Wales and Northern Ireland exclusively.	Whilst it is understood that NHS hospitals across the United Kingdom (UK) face the same pressures whether they are located in England, Scotland, Wales or Northern Ireland, it is documentation produced for use in England which has the power to influence social practice within the NHS Trust that will be the focus of any further studies conducted following the CDA.
Documents and legislation that give information and guidance on patient care and service provision within NHS hospitals.	Investigations and reports which evaluate the current state of services unless they include recommendations and guidance on how care and services should be provided.	The main aim of this study is to establish how the government and leading legislative bodies perceive and influence the exception of patient care within NHS hospitals with particular reference to diagnostic imaging. It is not to evaluate the findings of investigative reports into Trust and departmental performance.
Documents and legislation that is easily accessible to both NHS staff and patients/public.	Publications that are no longer openly available.	The internet is becoming an increasingly popular source of health information. The selected material is anticipated to have the potential to influence social change and expectations regarding care provided within NHS hospitals. If the public is unable to access the information, then it is unlikely to inform or influence behavior and expectations.
Current and most up to date versions/editions of documents.	Documents and publications that have been replaced or superseded.	Much government and institutional documentation is subject to annual, bi yearly or quarterly review. As the NHS is in constant state of review and flux it is important that the most up to date and relevant documents are analysed.

Table 3.2 Document selection and justifications.

Document	Source	Inc.	Exc.	Justification
NHS Constitution Including: NHS Constitution for England: The NHS belongs to us all (2015) Handbook to the NHS Constitution (2015) NHS Constitution for England (Easy Read Version) (2015) NHS Constitution for England (Easy Read Poster) (2015) NHS Constitution for England (Audio Version) (2015)	Department of Health (DOH) https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/480482/NHS_Constitution_WEB.pdf https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/474450/NHS_Constitution_Handbook_v2.pdf https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/473467/NHS_Constitution_EasyRead.pdf https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/473470/NHS_Constitution_Easy_Read_Poster.pdf https://soundcloud.com/dhgovuk/nhs-constitution-audio-version	✔		Main DOH publication concerning patient care and NHS service provision. All formats are included as they are significant in the distribution of the knowledge that is being publicised. It is important to acknowledge the use of different formats to convey the same message to different audiences.
The Mid Staffordshire NHS Foundation Trust Public Enquiry. Report of the Mid Staffordshire NHS Foundation Trust Public Inquiry. (Feb 2013)	The National Archive http://webarchive.nationalarchives.gov.uk/20150407084003/http://www.midstaffspublicinquiry.com/report		✗	Document is extremely large consisting of 3 Volumes. Limited time constraints. A full investigation the document falls outside of the inclusion criteria.
The Mid Staffordshire NHS Foundation Trust Public Enquiry. Report of the Mid Staffordshire NHS Foundation Trust Public Inquiry: Executive summary (Feb 2013)	The National Archive http://webarchive.nationalarchives.gov.uk/20150407084003/http://www.midstaffspublicinquiry.com/report	✔		Manageable sized document. Although is an investigation report contains recommendations to improve patient care and service delivery and has influenced Government publications regarding the provision of care in the NHS since publication.
Equity and excellence liberating the NHS (July 2010)	DOH https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/213823/dh_117794.pdf	✔		Government White Paper produce by the coalition Government detailing the 'bold vision' to improve and influence the future of care delivery in the NHS. The emphasis is to put patients at the centre of their own care. The vision is to make the NHS better for both patients and staff and to improve the quality of care delivery.
Patient experience in adult NHS services. NICE quality standard 15. (2012)	National Institute for Healthcare Excellence (NICE) https://www.nice.org.uk/guidance/qs15/resources/patient-experience-in-adult-nhs-services-2098486990789		✗	Standards are included in Guideline 138 which has more in-depth information regarding the expectations of care delivery in the NHS

Table 3.2 (continued) Document selection and justifications.

Document	Source	Inc.	Exc.	Justification
Patient experience in adult NHS services: improving the experience of care for people using adult NHS services (2012) NICE Clinical Guideline 138	NICE https://www.nice.org.uk/guidance/cg138/resources/patient-experience-in-adult-nhs-services-improving-the-experience-of-care-for-people-using-adult-nhs-services-35109517087429	✔		Document details the expectations of NICE regarding the adult patient experience whilst using services in the NHS
Standards for providing a 24-hour diagnostic radiology service. (2009)	The Royal College of Radiologists (RCR) https://www.rcr.ac.uk/sites/default/files/docs/radiology/pdf/BFCR(09)3_diagnostic24hr.pdf		✗	Published 2009 therefor falls outside of date inclusion criteria. Content focuses on Radiologist cover and conditions of service rather than patient care and service delivery to the patient.
Five years forward series Including: Five Year Forward View (Oct 2014) The *Forward View* into Action: Planning For 2015/16 (Dec 2014). Five Year Forward View: Time to Deliver (June 2015)	NHS England http://www.england.nhs.uk/wp-content/uploads/2014/10/5yfv-web.pdf http://www.england.nhs.uk/wp-content/uploads/2014/12/forward-view-plning.pdf http://www.england.nhs.uk/wp-content/uploads/2015/06/5yfv-time-to-deliver-25-06.pdf		✗	Documents are concerned with the re-organisation of NHS services on a macro level, emphasising the need for healthcare prevention initiatives and the redistribution of services away from the hospital environment. Whilst there is an emphasis on the patient being at the heart of their own care decisions the documents seek to influence social change regarding health responsibilities and encouraging patients to take more responsibility for their health, thus reducing the need for treatments and the use of NHS health services. Whilst the documents address the need for important changes to be made to the NHS to ensure equity and quality services using a finite budget, they do not address the expectations of care delivery as would apply to one on one interactions and service delivery within individual clinical areas.
NHS Services, Seven Days a Week Forum: Summary of Initial Findings (Dec 2013)	NHS England http://www.england.nhs.uk/wp-content/uploads/2013/12/forum-summary-report.pdf		✗	More a strategic plan for the distribution of resources than an influential document focusing on actual care delivery.
Implementing 7 Day Working in Imaging Departments good practice Guidance (Jan 2012)	DOH. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/213707/dh_132083.pdf		✗	More a strategic plan for the distribution of resources than an influential document focusing on actual care delivery.

Table 3.2 (continued) Document selection and justifications.

Document	Source	Inc.	Exc.	Justification
Equality for all: delivering safe services seven days a week.	NHS Improving Quality http://www.nhsiq.nhs.uk/resource-search/publications/diagnostic-challenges-7-day.aspx		✗	The following 3 documents all focus on improvements that have been made and case studies that demonstrate how services can and have been implemented.
Equality for all: delivering safe services seven days a week-case studies	NHS Improving Quality http://www.nhsiq.nhs.uk/resource-search/publications/nhs-imp-seven-days.aspx		✗	See Above
NHS services open seven days a week-every day counts	NHS Improving Quality http://resource-search/publications/every-day-counts-seven-day-services.aspx		✗	See Above
Standard of conduct, performance and ethics. (Your duties as a registrant) (2016)	HCPC http://www.hcpc-uk.org/assets/documents/10004EDFStandardsofconduct,performanceandethics.pdf	✔		Document defines professional standards and codes of conduct for radiographers.
Standards of Proficiency Radiographers (2013)	HCPC. http://www.hcpc-uk.org/publications/standards/index.asp?id=51	✔		Document defines professional standards and codes of conduct for radiographers.
Code of Professional Conduct. (2013)	The Society and College of Radiographers (SCoR) (https://www.sor.org/learning/document-library/code-professional-conduct	✔		Document defines professional standards and codes of conduct for radiographers.

Of the thirteen original documents identified, eight were selected to be read in full (Table 3.3)

Table 3.3 Selected documents.

Title.	Author/Publisher.
The NHS Constitution The NHS belongs to us all (all formats).	Department of Health (2015b)
The Handbook to The NHS Constitution for England.	Department of Health (2015a)
Equity and Excellence Liberating the NHS.	Department of Health (2010)
The Mid Stafford shire NHS Foundation Trust Public Enquiry. Report of the Mid Staffordshire NHS Foundation Trust Public Enquiry: Executive Summary.	Francis (2013)
Patient experience in adult NHS services: improving the experience of care for people using adult NHS services (2012). NICE guideline 138.	National Institute for Health and Clinical Excellence (2012)
Code of Professional Conduct.	The Society and College of Radiographers (2013)
Standards of Proficiency Radiographers.	Health and Care Professions Council (2013)
Standards of conduct performance and ethics. (Your duties and a registrant).	Health and Care Professions Council (2016)

Each of the documents were read in full to ensure that their content remained relevant to the critique and evaluation of the perceptions and expectations of care from the perspective of those who dictate clinical practice. At this stage, a decision was made to exclude *Equity and Excellence: liberating the NHS* (Department of Health 2010), and the *Report of the Mid Staffordshire NHS Foundation Trust Public Enquiry: Executive Summary* (Francis Robert 2013) from further analysis.

The document *Equity and Excellence* was removed as it represents the UK government vision of care rather than a direct reflection of how the government defines and perceives care. Consequently, while it may be considered a pivotal vision to the overall system of care in the NHS, the true influence of the document on modern clinical practice was considered

negligible. Consideration was also given to the fact that inclusion of *Equity and Excellence* would introduce themes of efficiency and productivity into the discussion. However, this would have forced preconceptions into the CDA adding bias to the sampling (Gibson 2007) and reducing the validity of the work (Kelle 2007). Forcing of the data would also impact upon the integrity of the wider adapted GT study presented within this thesis.

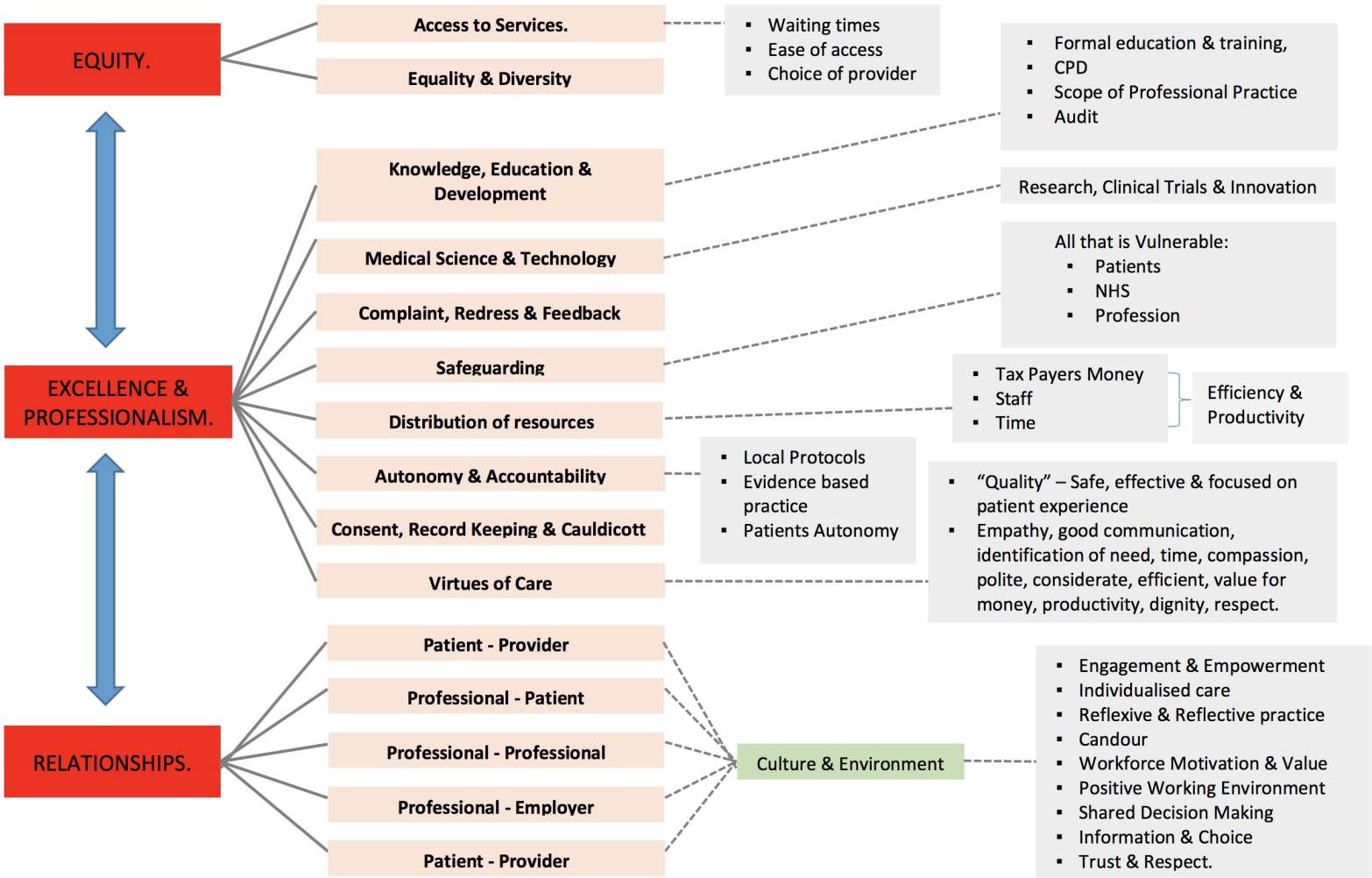
With regards to the *Report of the Mid Staffordshire NHS Foundation Trust Public Enquiry: Executive Summary* (Francis Robert 2013), the outcome of the enquiry undeniably affected public awareness of failings and contributed to the proposals for cultural change within the NHS. However, the document itself, whilst highlighting recommendations for improvement, has resulted in the production and amendments of the other documents selected for full analysis. Therefore, its inclusion within the CDA has been limited to providing contextual and historical reference to the interpretations made during the review.

3.4 Data Analysis

3.4.1 Identification of Relevant Data

Each of the remaining six documents selected for full analysis were re-read to identify sections of data within the documentation that were relevant to the construction and provision of care within the NHS as an organisation. Initial written labels (codes) were applied to paper copies of the data to identify the varying elements of patient care present within the documents. The coded data was then organised using a combination of paper copies, coloured pens, and NVivo data management software (QSR International Pty Ltd 2018), into preliminary themes (Figure 3.1). Whilst these initial processes identified a large amount of significant data, analysis at this stage failed to provide insight into how the documentation may influence practice which, in the context of this study, is related to the perception, delivery and experience of care within CT. To address this, in-depth questioning of the selected data was undertaken utilising a three-stage approach consisting of description, interpretation and explanation (Fairclough 2015: 58-59).

Figure 3.1 Preliminary thematic analysis.



3.4.2 Description

Description was used to identify the formal linguistic properties of the relevant data extracted during the analysis. This stage helped to the identify any constructed relationships between the author or representative body, whose ideology the document portrayed, and the audience (i.e. patients, radiographers or a combination of both) (Fairclough 2015). A focus was placed on identifying the relational value of the grammar and vocabulary used within the documents under review. Relational value is concerned with the way social relationships between the author and the audience are enacted and negotiated within the text (Fairclough 1993; Fairclough 2015). Whilst this process is concerned with addressing the structure and vocabulary of sentences to establish the intention and influences that sections of the document may have on the reader, it is also concerned with the way pronouns such as *we* and *us* were used within the text to express the authors position in relation to the reader and the subject under discussion (Fairclough 2015).

3.4.3 Interpretation

The Interpretation phase of analysis was used not only to interpret the text per-se, but to establish the context in which the document had been written (Fairclough 2015). The method encouraged the documents to be viewed from the position of both myself, as a researcher and radiographer, and from the perspective of those who had produced the documentation. The perceived significant data extracted from each of the documents under review was appraised using levels of questioning asking:

1. What is going on?
2. Who is involved?
3. What influence do the relationships have within the text?
4. What is the role of the language identified in the descriptive phase?

3.4.4 Explanation

Explanation is concerned with identifying and making explicit the social processes evident within in the selected data (Fairclough 2015). It was used to identify areas where the text may be influential at a societal, institutional or situational level. Fairclough (2015:172) states: '*The objective of the stage of explanation is to portray a discourse as part of a social process, as a social practice, showing how it is determined by social structures and what reproductive effects discourses can cumulatively have on those structures, sustaining them or changing them.'* For this stage of the review three questions were applied to the extracted data:

1. What power relationships at situational, institutional and societal levels help shape the data and discourse?
2. What elements of the text are ideological in nature? (i.e. what are the hidden or explicit ideologies?)
3. What effect does the text have on practice, relationships and the perception of care?

3.5 Discussions

3.5.1 Overview of the Documents

3.5.1.1 The NHS Constitution and The Handbook to the NHS Constitution

The NHS Constitution (Department of Health 2015b), originally published as a formal document on 21st January 2009, is a Department of Health (DOH) publication which aimed to bring together the principles, values, rights and responsibilities that underpin the National Health Service (NHS) (Department of Health 2015b) as a single source of information (Department of Health 2015c). *The NHS constitution* is, however, far from a 'stand-alone' document. A further 156 page supplement entitled *The Handbook to the NHS Constitution* (Department of Health 2015a) was produced alongside the Constitution document. Although the Handbook identifies its intended audience as anyone who wishes to have more detail regarding the rights and pledges of *The NHS constitution* (Department of Health 2015a), the

Handbook makes explicit that the document will be of particular use to organisations that support and advise patients and staff (Department of Health 2015a). Importantly, whilst there is a legal obligation for NHS providers to take account of *The NHS Constitution* when providing services, no such legal accountability is attached to *The Handbook to the NHS Constitution* (House of Lords 2009: c135).

3.5.1.2 Patient Experience in Adult NHS Services

The *Patient experience in adult NHS services* document (National Institute for Health and Clinical Excellence 2012) was produced by NICE in 2012 following a direct referral from the DoH. For ease of reference the document is referred to as *guideline 138*. Whilst *guideline 138* places focus on the generic patient experience, the aim of the guideline is *'to provide the NHS with clear guidance on the components of a good quality patient experience.'* (National Institute for Health and Clinical Excellence 2012: 3). *Guideline 138* explicitly identifies the role that *all* staff have in guiding the existing NHS culture towards patient centred services. However despite placing emphasis on improving the experience of care for patients, *guideline 138* also implicitly addresses the importance of valuing staff when aiming to provide high quality services (West and Dawson 2011; Maben et al. 2012).

3.5.1.3 The Code of Professional Conduct

The remaining documents selected for review all focus upon professional practice. *The Code of Professional Conduct*, produced by the Society and College of Radiographers (SCoR) (The Society and College of Radiographers 2013), represents part of the legal and ethical framework that governs radiography practice in the UK (The Society and College of Radiographers 2013). The main body of the document is constructed using a series of declarative, yet imperative, statements (Gee 2014; Fairclough 2015). Each of the simple statements begins with 'You must' which purposefully structures the text into the formation of a set of rules. Whilst these rules clearly define where lines of accountability and responsibility lie in practice, they also show that the SCoR is exhorting dominance over the radiographer

audience (Fairclough 2015), as would be expected from a professional or regulatory body and a text which has the purpose of defining practice.

3.5.1.4 Standards of Conduct Performance and Ethics & Standards of Proficiency Radiographers

Both *Standards of Conduct Performance and Ethics* (HCPC 2016) and *Standards of Proficiency – Radiographers* (HCPC 2013) are produced by the Health & Care Professions Council (HCPC) and also form part of the legal and ethical framework that governs radiography practice in the UK (The Society and College of Radiographers 2013). The HCPC are the regulatory body to which all practicing radiographers within the UK must be registered. To remain on the HCPC register, all professional applicants must abide by the rules stipulated by the HCPC within the *Standards of Conduct Performance and Ethics* (HCPC 2016) and the *Standards of Proficiency – Radiographers* (HCPC 2013). As with the *Code of Professional Conduct* (The Society and College of Radiographers 2013), *Standards of Conduct Performance and Ethics* (HCPC 2016) has been produced using simple declarative statements beginning with 'You must' which leaves the audience of the document with a clear understanding of what is expected of them with regards to being fit to practice. *Standards of Proficiency – Radiographers* (HCPC 2013) is a profession specific document, covering both diagnostic and therapeutic arms of the profession whilst highlighting specific guidance statements which are relevant to each group. The document (HCPC 2013) moves away from the dictatorial statements of the *Standards of Conduct Performance and Ethics* (HCPC 2016) and addresses the expectations of what radiographers 'should' be achieving within their own individual scope of practice. This means that whilst the HCPC are in control of how the document is written and produced, elements included within the document are purposely open to interpretation enabling them to be relevant to practice on an individual level (HCPC 2013). The HCPC (2013) do however make it clear within the document that although staff are responsible for protecting patients during examinations, and for practicing as automatous practitioners,

the HCPC will ultimately control whether or not they believe professionals are acting appropriately.

3.5.2 Influencing Themes and Preliminary Interpretations

The following section will make explicit the preliminary themes and analytical interpretations made during the document review which have influenced study development and guided the direction and content of the theoretical sampling deployed during the proceeding research. Relevant elements of the review are considered and presented alongside additional supporting literature, which together have influenced the interpretations and constructions presented in Chapters 6,7 and 9, in keeping with the adapted Corbin and Strauss (2015) GT methodology. The supporting literature includes the rejected review documents (Department of Health 2010; Francis Robert 2013), which have not been formally analysed but used as supporting data to validate the arguments and interpretations presented in the proceeding sections of this chapter.

3.5.2.1 Providing Quality Care

Defining and measuring quality care is a vast, varied and highly contested subject (Campbell et al. 2000; Cooperberg et al. 2009). Within modern healthcare, the provision of poor-quality care is an unacceptable concept. In recent years, public dissatisfaction with the level of care provided, within both NHS and private institutions, has received increased media attention. High profile inquiries into failing institutions (Department of Health 2012b; Francis Robert 2013; Keogh 2013) have increased societal awareness of the manifestation of insidious cultures within trusted institutions (Francis Robert 2013). Whilst many of the quality improvement initiatives promoted within the NHS (NHS England and NHS Improvement 2019b) have manifested as a direct consequence of the inquiry into failings at the Mid Staffordshire NHS Foundation Trust (Francis Robert 2010; Francis Robert 2013), when discussing the provision of healthcare services, NHS policy makers define quality care in line with Lord Darzi who expressed quality care in terms of

that which is safe, effective and focused on patient experience (Darzi 2008) (Data box 3.1).

Data box 3.1

Supporting Data
‘Lord Dazi's report high quality care for all (2008) highlighted the importance of the entire patient experience within the NHS, ensuring people are treated with compassion, dignity and respect within a clean, safe and well managed environment’ *(National Institute for Health and Clinical Excellence 2012: 3)* ‘Their (the recommendations of the guidance) implementation will help to ensure that healthcare services are acceptable and appropriate, and that all people using the NHS have the best possible experience of care.’ *(National Institute for Health and Clinical Excellence 2012: 4)* ‘the NHS aspires to the highest standards of excellence and professionalism - in the provision of high quality care that is safe, effective and focused on patient experience; and the people it employs, and in the support, education, training and development they receive; in the leadership and management of its organisations; and its commitment to innovation and to the promotion, conduct and use of research to improve the current and future healthcare and care of the population’ *(Department of Health 2015b: 3)*

Whilst patient safety is covered by an array of legislative, professional and policy documentation, judging effective care is very much reliant on understanding the context in which care is being provided (Campbell et al. 2000). Measures of institutional effectiveness and patient experiences within the NHS tend to follow generic short survey models (Department of Health 2014; NHS England 2015) which do not take into account specific care environments or embrace qualitative methods to truly assess human experience. As a result, they do not take into account the specific context of the clinical CT examination. Importantly, Tronto (2013) argues that qualitative surveys such as those used to assess the care provided within the NHS fail to reliably evaluate quality as they are derived from consumer market models which view the patient as a ‘customer’. Such market assumptions, which presume the customer to be a rational, autonomous decision maker capable of making a choice based on the possession of adequate information, do not generally reflect the position or situation of many patients within healthcare organisations (Tronto 2013). Therefore, a need exists to address and

measure quality and experience through more detailed qualitative inquiry within contextually different clinical areas such as CT.

3.5.2.2 Patient Centred Services

A significant theme running throughout the reviewed documentation is the desire and expectation that NHS services and radiographers will provide care that is focused around the needs of the patient population on both an individual and social level (Data box 3.2).

Data box 3.2

Supporting Data
'The patient will be at the heart of everything the NHS does' *(Department of Health 2015b: 3)* 'This guidance provides the evidence and the direction for creating sustainable change that will result in an 'NHS cultural shift' towards a truly patient-centred service' *(National Institute for Health and Clinical Excellence 2012: 3)*

When the above statement *(National Institute for Health and Clinical Excellence 2012: 3)* is read and considered in conjunction with the knowledge that the commissioning body of *guideline 138* is the DoH, the text becomes a direct acknowledgement of the government's intention to manipulate the existing culture of the NHS towards one in which the patient is valued as an individual (Data box 3.3).

Data box 3.3

Supporting Data
'Patients wish to be seen as an individual within the healthcare system. This requires healthcare professionals to recognise the individual, and for services to be tailored to respond to the needs, preferences and values of the patient' *(National Institute for Health and Clinical Excellence 2012: 11)*

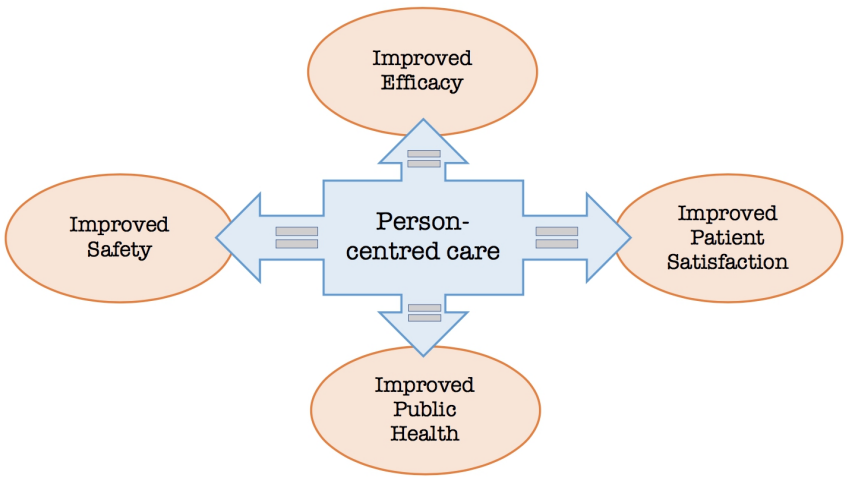
The NHS is being reconstructed away from a hierarchical institution within which professional staff dominate the patient due to their professional status. It is recognised that trust must be earnt through behaviour and actions, not via a job title or professional status alone (Data box 3.4).

Data box 3.4

Supporting Data
'we earn the trust placed in us by insisting on quality and striving to get the basics of quality care – safety, effectiveness and patient experience – right every time' *(Department of Health 2015b: 5)*

Person-centred care (PCC) is a model of healthcare in which healthcare providers work in partnership with the patient and their families to identify and satisfy the needs and preferences of the patient (Itri 2015). A precise definition of PCC has evaded the literature due to the vast array of clinical settings, professional sub groups and medical conditions associated with healthcare provision. Research considering PCC has generally focused on clinical encounters and consultations with the aim of establishing whether consulting styles can be manipulated to improve health outcomes (Little et al. 2001; Redfern et al. 2006; Pope 2012; Tritter and Koivusalo 2013). However, Reynolds et al (2009) argues that PCC is associated with a wider range of positive outcomes (Figure 3.2).

Figure 3.2 The positive outcomes of patient- centred care (Reynolds et al 2009).



Little et al (2001) suggest that there are five principle domains to the provision of PCC and that patients' desire care that:

- Explores the main reasons for the visit, patient concerns and the need for information;
- Strives for an integrated understanding of the patients' world (i.e. views patient as a whole person with emotional needs and life issues);
- Aims to understand the patient's health issues and find common ground with regards to management and treatment plans (i.e. create a partnership);
- Enhances prevention and promotes health;
- Builds on the ongoing doctor/healthcare provider - patient relationship.

(Little et al. 2001).

Little et al (2001) argue that the effective implementation of PCC is reliant on knowing which elements of care are important to the patient. However, to date this has not been identified within CT imaging or defined within radiography specific literature.

Guideline 138 contains an entire section entitled 'Knowing the patient as an individual.' However, when interpreted from the perspective of a diagnostic radiographer, the expectations placed upon staff by the guidance are interpreted as being unrealistic and unrelatable within fast-paced diagnostic environments such as CT (Data box 3.5).

Data box 3.5

Supporting Data
‘Develop an understanding of the patient as an individual, including how the condition affects the person, and how the persons circumstances and experiences affect their condition and treatment.’ *(National Institute for Health and Clinical Excellence 2012: 7)* ‘Explore the patients’ preferences about the level and type of information they want’ *(National Institute for Health and Clinical Excellence 2012: 15)* ‘hold discussions in a way that encourages the patient to express their personal needs and preferences for care, treatment, management and self-management. Allow adequate time so that discussions do not feel rushed.’ *(National Institute for Health and Clinical Excellence 2012: 11)* ‘Listen to and address any health beliefs, concerns and preferences that the patient has, and be aware that these effect how and whether they engage with treatment. Respect their views and offer support if needed to help them engage effectively with services and participate in self-management as appropriate’ *(National Institute for Health and Clinical Excellence 2012: 5)*

Whilst claiming to be ‘achievable’, *guideline 138* presents the radiographer audience with an idealist portrayal of the patient experience where by ‘adequate time’ (National Institute for Health and Clinical Excellence 2012: 11) should be taken to be part of a relationship building process to ensure that patients ‘do not feel rushed’. This has been previously reported as being in conflict with the radiographers’ need to provide efficient services, which are in turn reported as being significant to the patient when discussing quality care (Hayre et al. 2016). Whilst one may strive to provide time to address the needs of each individual patient, the guidance does not account for the needs of the many for whom diagnostic and treatment pathways may consequentially become delayed.

A further area in direct conflict with the diagnostic radiographer’s clinical practice is a requirement placed upon staff by *guideline 138* which is concerned with judging patients based upon first impressions (Data box 3.6).

Data box 3.6

Supporting Data
'Avoid making assumptions about the patient based on their appearance or their personal characteristics.' *(National Institute for Health and Clinical Excellence 2012: 8)*

In practice, due to the limited time spent with each patient and the limited information regarding the patient's condition made available to the radiographers prior to the examination, radiographers actively make judgements about the patient based on their appearance and initial behaviour in order to assess how to conduct and proceed with an examination. Whilst it is specified within *guideline 138* that *'relevant information should be shared between professionals and across healthcare boundaries to support high-quality care'* (National Institute for Health and Clinical Excellence 2012: 12), this is rarely the case in practice.

Attempts have been made to encourage overt PCC into diagnostic imaging. Brand et al (2004) suggest that specific patient groups such as those with suspected Multiple Sclerosis (MS), should be given the opportunity to attend an educational presentation related to MRI imaging and image appearances prior to their examination. Brand et al (2004) argued that providing patients with knowledge regarding disease presentations on MRI images empowers them to take a more active role in their treatment decision discussions during subsequent medical consultations. The educational model proposed by Brand et al (2004) appears in principle to benefit the care experience of those included in the trial. However, in NHS practice, the model may be considered as an extremely idealistic vision as radiographers within the field claim they are often forced to make a conscious trade-off between time taken to provide information to the patient and ensuring scans are conducted in a timely fashion due to demand pressures placed upon the service (Munn et al. 2014). How and when training sessions would be incorporated into a national public healthcare system like the NHS was not considered by Brand et al's (2014) study which focussed on the Australian mixed economy healthcare

system (Brand et al. 2014) and therefore translation to the UK healthcare system is complex. An additional consequence of patient education as identified by Brand et al (2014) was that the physician patient relationship could be potentially threatened. Patients within the study were shown to become more distrusting of the clinicians as their own knowledge increased (Brand et al. 2014). However, it was noted by the authors that bias was present within the study population as participants were predominantly well educated and therefore it is uncertain whether this would manifest in the wider population (Brand et al. 2014).

3.5.2.3 Shared Decision Making

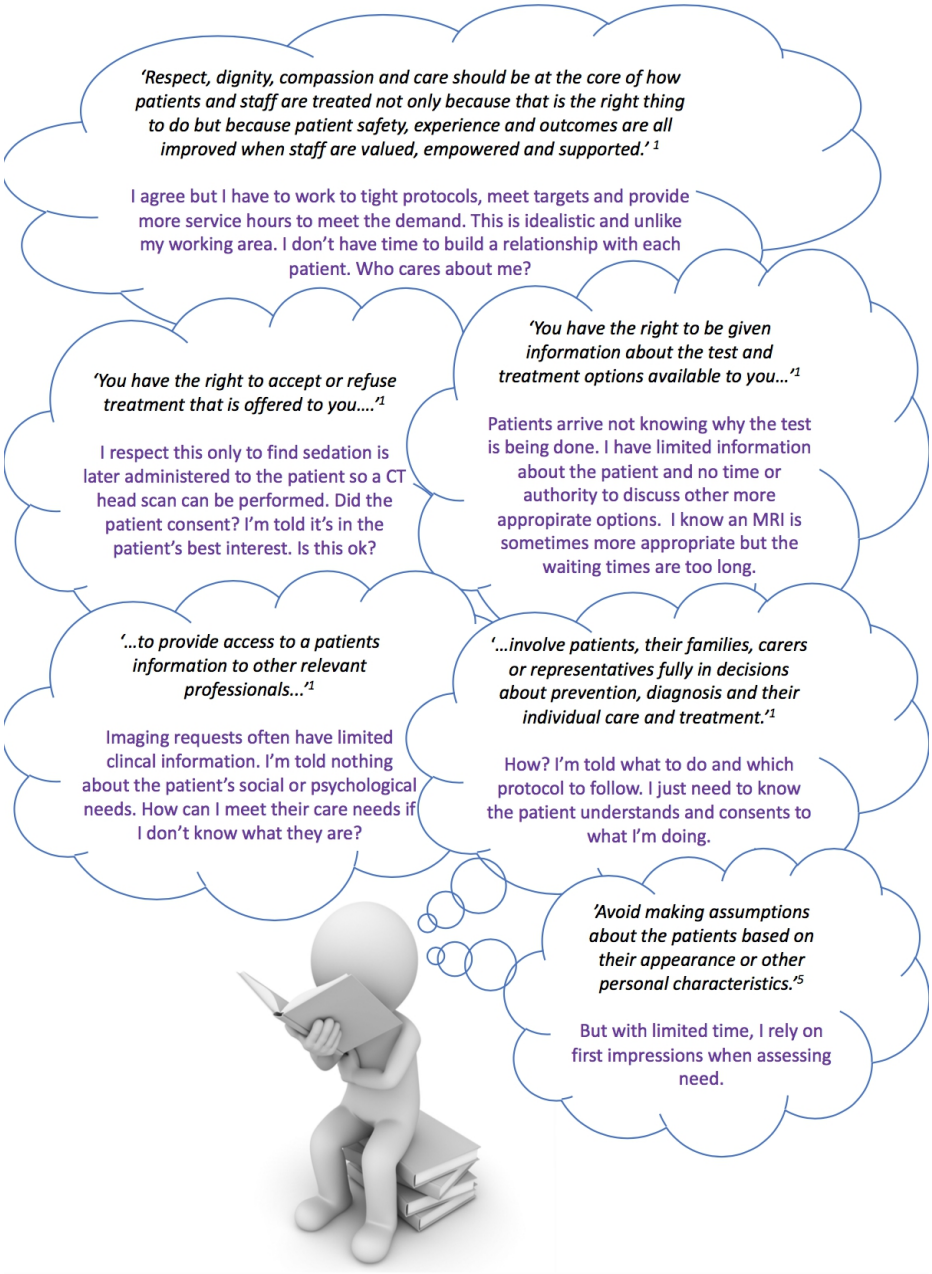
Another theme extracted from the reviewed professional and legislative documentation which is interlinked with PCC and valuing the patient as an individual are the principles of shared decision making (Data box 3.7).

Data box 3.7

Supporting Data
'Use the principles of shared decision-making, ensure the patient is aware of the options available and explain the risks benefits and consequences of these' *(National Institute for Health and Clinical Excellence 2012: 17-18)* 'you must listen to, and respect, the wishes of the patients, seeking to empower them to make decisions about their care and treatment.' *(The Society and College of Radiographers 2013: 3 & 5)* 'Give the patient (and their family members and/or carers if appropriate) adequate time to make decisions about investigations and treatments' *(National Institute for Health and Clinical Excellence 2012: 18)* 'When discussing decisions about treatment and investigations, do so in a manner that enables the patient to express their personal needs and preferences' *(National Institute for Health and Clinical Excellence 2012: 16)* 'When offering any investigations or treatments: explain the medical aims of the proposed care to the patient, openly discuss and provide information about the risks, benefits and consequences of the investigation or treatment options (taking into account factors such as coexisting conditions and patient preferences) clarify what the patient hopes the treatment will achieve and discuss any misconceptions with them, set aside time adequate time to allow any questions to be answered and ask the patient if they would like a further consultation' *(National Institute for Health and Clinical Excellence 2012: 16 - 17)*

Whilst the notion of giving time to patients to discuss their investigation options does in itself raise questions regarding time and/or lack of time within the diagnostic imaging environment, the concept of shared decision making as a whole has stimulated additional theoretical questioning and reflection relating to real world clinical practice. These preliminary interpretations, together with additional reflections presented in this chapter are illustrated together in Figure 3.3.

Figure 3.3 Preliminary thought processes and interpretations of a CT radiographer.



1. Department of Health (2015b) *The NHS Constitution the NHS belongs to us all.* London: Department of Health
5. National Institute for Health and Clinical Excellence (2012) *Patient experince in adult NHS services: improving the experience of care for people using adult NHS services .* (Clinical Guideline 138) London: NICE

It could be argued that a significant amount of the data provided in Data box 3.7 has been extracted from a guideline and is therefore open to interpretation and should not dictate practice. However, the SCoR (The Society and College of Radiographers 2013) promote the transferal of decision making towards the patient (Data box 3.8).

Data box 3.8

Supporting Data
'working in partnership with patients is more than just giving appropriate information before undertaking examinations or treatment. It means transferring the decision-making to them, respecting their autonomy to make decisions about their own care or treatment and advocating with others on their behalf even if you do not agree with their decision.' *(The Society and College of Radiographers 2013: 5 & 6)*

At the point of attending for examination it can be argued that the only choice available to the patient is to continue with the examination, or aspects of the examination, or not. Whilst the gold standard examination for certain conditions may not be CT (e.g. for transient ischemic attack (TIA), MRI is preferable to CT) (National Institute for Health and Clinical Excellence 2019), these alternatives may not be available as a choice due to service constraints. Failure to offer the most appropriate imaging modality could lead to dissatisfaction amongst the patient population and negatively impact upon the patient professional relationship if patients fail to receive examinations and services to which they feel entitled (Data box 3.9).

Data box 3.9

Supporting Data
'You have the right to receive care and treatment that is appropriate to you, meets your needs and respects your preferences.' 'You have the right to expect your NHS to assess the health requirements of your community and to commission and put in place the services to meet those needs as considered necessary' *(Department of Health 2015b: 6)*

Whilst the language used in *The NHS Constitution* (Data box 3.9), does not state specifically that the patient has the right to any diagnostic test they would like, the interpretation of these rights is subjective and personal. Therefore, the potential for patients to expect to be given what they want is considered valid.

3.5.2.4 Equality & Equity.

The NHS is built upon the defining principles that services remain available to all irrespective of their ability to pay (Department of Health 2015b; Department of Health 2015a). Equity and equality are therefore expected and explicit themes that run throughout the selected documentation. When this is considered alongside the concept of working in partnership with the patient (Data box 3.8) *The NHS Constitution* provides more evidence to support the argument that discourse within the reviewed documents is purposefully driving the culture of the NHS from being hierarchical to patient-centred (Data box 3.10).

Data box 3.10

Supporting Data
'The NHS is founded on a common set of principles and values that bind together the communities and the people it serves – patients and public – and the staff who work for it' *(Department of Health 2015b: 2)*

Although it is believed the aim of this statement above (Data box 3.10) is to depict the patient and public as being 'bound' together in unity with staff, the construction of the sentence makes a clear separation between staff and the patients and public. Specifically, Staff 'work for it', and not *with* or *in it.* In this context staff 'work for' the NHS which is there to serve the public. The NHS values denoted within the constitutional documents (Department of Health 2015a; Department of Health 2015b) add to this interpretation with the inclusion of the heading: 'Working together for patients'. Although not directly stated within the documents, it is implied that staff are employed to serve the

patient, with the service role traditionally depicted as a subordinate role in society. For the DoH ideology of unity to manifest within the clinical environment, mutual respect is needed as an integral element of the patient staff relationship (Data box 3.11). However, the choice of wording presented within the Constitutional documents does not convey this mutuality to the audience.

Data box 3.11

Supporting Data
'2.4 recognise that relationships with service users should be based on mutual respect and trust, and be able to maintain high standards of care even in situations of personal incompatibility' *(HCPC 2013: 7)*

Modern themes of equality and equity within the Constitution stretch further than the legal obligations of the *Equality Act 2010 (Equality Act 2010).* Within the initial introduction of the Constitution it is made clear that equity is not just the responsibility of the NHS when providing services (Data box 3.12).

Data box 3.12

Supporting Data
'… together with responsibilities**,** which public, patients and staff owe to one another to ensure that the NHS operates fairly and effectively' *(Department of Health 2015b: 2)*

Whilst ownership and responsibility for the NHS is expected from all involved with, using, and delivering the service, the way in which the two groups (patients/public and staff) are addressed when matters of discrimination are defined are very different. The use of the word 'owe' (Data box 3.12) implies that staff and patients are indebted to each other. However, vast differences in the terminology used are noted within other the documentation (The

Society and College of Radiographers 2013; Department of Health 2015b) (Data box 3.13).

Data box 3.13

Supporting Data
‘You have a duty not to discriminate against patients or staff and to adhere to equal opportunities and equality and human rights legislation.’ *(Department of Health 2015b: 14)* ‘You must practice in an anti-discriminatory manner giving compassionate care that takes into account social cultural differences.’ *(The Society and College of Radiographers 2013: 3 & 4)*

The language included in Data box 3.13 takes the statements beyond a moral obligation to treat all equally towards a legal duty with accountably (Department of Health 2015a). Yet the responsibility of patients and public regarding the treatment of staff is more of a polite request despite the underlying legal implications of non-compliance (Data box 3.14).

Data box 3.14

Supporting Data
‘Please treat NHS staff with respect and recognise that violence, or the causing of nuisance or disturbance on NHS premises, could result in prosecution.’ *(Department of Health 2015b: 11)*

Whilst it is made clear to patients and public, that they have the legal right not to be discriminated against *(Department of Health 2015b),* the text is not as direct when it comes patient responsibilities. Consequently, while it is acknowledged that the patient is to be at the centre of care, it is proposed that frontline staff may interpret the patient’s welfare as being put ahead of their own, which could lead to feelings of demoralisation and being undervalued. This directly contradicts how *The NHS Constitution* aspires working in the NHS to be (Data box 3.15).

Data box 3.15

Supporting Data
'Respect and dignity. We value every person – whether patient, their families or carers, or staff – as an individual, respect their aspirations and commitments in life, and seek to understand their priorities, needs, abilities and limits. We take what others have to say seriously. We are honest and open about our point of view and what we can and cannot do.' *(Department of Health 2015b: 5)*

3.5.2.5 The Influence of Positive Working Environments.

Both *The NHS constitution* (Department of Health 2015b) and *The Handbook to the NHS constitution* (Department of Health 2015a) provide significant evidence to suggest that positive working environments are considered influential to the provision of quality care within the NHS. The relational mode constructed between the author and reader portrays enthusiasm and encouragement for the significant role all employees hold in ensuring the NHS survives as a successful, positive organisation in which staff actively choose to be employed and in which patients and carers feel safe and confident with the care provided (Data box 3.16).

Data box 3.16

Supporting Data
'It is the commitment, professionalism and dedicated staff working for the benefit of the people the NHS serves which really makes the difference. High quality care requires high quality workplaces, with commissioners and providers aiming to be the employers of choice' *(Department of Health 2015b: 12)*

Positive reaffirmations are used to convey a collective feeling of respect and support towards staff with the intention to generate emotions associated with feeling valued amongst the staff audience. However, if the interpretations presented in the preceding section of this thesis are considered, the potential for feeling undervalued in practice may undermine this aspiration.

It is made clear by *The Handbook to the NHS constitution* that despite encouraging competition among organisations to be employers of choice, high quality working environments should not be exclusive nor privileged to the elite (Data box 3.17).

Data box 3.17

Supporting Data
'The pledges to NHS staff reaffirm the vision that quality workplaces should exist for all delivering NHS services – they should not just be the preserve of high performing organisations.' *(Department of Health 2015a: 117)*

What must be noted here are the use of the words 'vision' and 'should not just be' which acknowledge a situation within the NHS which requires improvement. It is implied by the text (Data box 3.17) that an inequality exists between those institutions rated as high performing and those which may not be in such a successful position.

Crucial to the government vision in the establishment of positive working environments is the need to promote supportive open cultures which enable staff to fulfil their roles to the best of their ability (Department of Health 2015a; Department of Health 2015b). This is demonstrated in the following pledges (Data box 3.18).

Data box 3.18

Supporting Data
'to provide a positive working environment for staff and to promote supportive, open cultures that help staff do their job to the best of their ability' 'to provide all staff with clear roles and responsibilities and rewarding jobs for teams and individuals that make a difference to patients, their families and carers and communities' *(Department of Health 2015b: 13)*

The Handbook to the NHS constitution strengthens this position by presenting the argument that 'a positive working environment' is directly linked to 'positive outcomes for patients' (Department of Health 2015a: 41). The document references evidence from Aston University Business School and the National Institute for Health Research demonstrating the existence of a clear link between positive staff experience and improved patient experiences. (West and Dawson 2011; Maben et al. 2012).

3.5.2.6 Autonomous Practice.

In today's modern NHS, standardized protocol-based care is said to be at the heart of improved service delivery, patient safety and satisfaction (Department of Health 2000a; Department of Health 2004; Rycroft-Malone et al. 2010). However, many share the view that strict adherence and attention to protocols is stripping the profession of radiography of its 'professional' status and restricting autonomous practice (Brady 1995; Nixon 2001; Sim and Radloff 2009; Yielder and Davis 2009). It has even been proposed by legal experts that strict adherence to protocols and guidance, when it is not in the patients best interest, may in itself be an act of negligence (Brazier and Cave 2011).

To presume the radiologist will take ultimate responsibly for an examination because they have vetted, and agreed an imaging request is a myth (Cashin et al. 2009). Each radiographer as per the SCoR *Code of Professional Conduct* (2013) is responsible and accountable for any radiological examination undertaken and is expected to work as an automatous practitioner (The Society and College of Radiographers 2013) (Data box 3.19).

Data box 3.19

Supporting Data
'Autonomous professional practice entails the exercise of judgment and decision making through a complex process of assessment and action that involves the interaction of knowledge, experience, values and practical skills.' *(The Society and College of Radiographers 2013: 1)*

For diagnostic radiographers the act of caring for patients as autonomous practitioners is not restricted to the technical activity by which images are obtained for diagnostic purposes (The Society and College of Radiographers 2013). The SCoR defines autonomous practice as *'a moral and ethical activity that demands high standards of reflective practice'* (The Society and College of Radiographers 2013: 1) and comes with increased accountability (Data box 3.20).

Data box 3.20

Supporting Data
'Autonomy entails accountability, which is the authority to make decisions about care and treatment and the freedom to act within a defined scope of professional practice.' *(The Society and College of Radiographers 2013: 1)* 'As individual professional practitioners you are fully accountable at all times for the quality of the compassionate care and treatment that you offer.' (The Society and College of Radiographers 2013: 2)

The above expectations presented by the SCoR are consistent with *The NHS constitution* which also makes it clear to patients and the public that staff have legal responsibilities regarding professional accountability when providing care. An obligation from which no one is exempt (Data box 3.21).

Data box 3.21

Supporting Data
'You have a duty to accept professional accountability and maintain the standards of professional practice as set by the appropriate regulatory body applicable to your profession or role.' *(Department of Health 2015a; Department of Health 2015b)*

Whilst both documents (The Society and College of Radiographers 2013; Department of Health 2015b) promote the expectations that radiographers will act as autonomous professionals who are at all times accountable for the quality of care they provide, little is known about how radiographers regard

their role as autonomous carers in an environment where both imaging and contrast administration protocols are standardised and may restrict the freedom to act and make informed care decisions as defined in Data box 3.20.

Sim and Radloff (2009) validate this concern by arguing that protocol directed practice may have led to a culture of followers rather than thinkers, who, are too afraid to act autonomously. When this evidence is considered in conjunction with my own experiences, I believe that we should question the Governments ideal that *'..therapists & nurses will increasingly work to standard protocols'* (Department of Health 2000b) and would suggest that such practice may be less '*visionary*' (Department of Health 2000b), than was first perceived. The Sim and Radloff study (2009) was however, based at a single site and the restrictions felt by this group of radiographers may not be generalised across the UK workforce. As Rycroft-Malone et al (2010) argue, the effect of protocols on nursing practice is dependent on the quality of the protocol and the context in which it is used. Consequently, further specific research relating to diagnostic imaging is necessary before the true impact of protocols on radiography practice and patient care can be evaluated.

3.5.2.7 Care in Radiography.

The HCPC state that radiographers must '*be able to assess monitor and care for the service user before, during and after diagnostic imaging procedure*' (HCPC 2013). However, as the evidence base is limited with regards to the provision of care by radiographers, there is a need to establish what care is and how it is provided in CT before the proficiency of radiographers in practice can be assessed.

The SCoR demand that the care provided by radiographers should be based on the best available evidence (The Society and College of Radiographers 2013). Unfortunately the limited radiography evidence base in relation to care makes the provision of '*the best compassionate care based on up-to-date*

evidence'(The Society and College of Radiographers 2013: 3 & 4), extremely challenging.

In recent years a lack of compassionate care in practice has resulted in patient suffering (Francis Robert 2013). In his report into the failings at the Mid Staffordshire NHS Trust, Francis (2013) concluded that due to the presence of evidence to suggest that the failings were not isolated to one Trust, there needed to be an increased focus on the generation of a culture of compassion and caring throughout the NHS (Francis Robert 2013). A theme which is evident within the reviewed professional and legislative documentation (Data box 3.22).

Data box 3.22

Supporting Data
'respect, dignity, compassion and care should be at the core of how patients and staff are treated not only because this is the right thing to do but because patient safety, experience and outcomes are all improved when staff are valued, empowered and supported' *(Department of Health 2015b: 3)* 'treat patients with respect, kindness, dignity, compassion, understanding, courtesy and honesty.' *(National Institute for Health and Clinical Excellence 2012: 8)* 'you must provide the best compassionate care for patients based upon up-to-date evidence.' *(The Society and College of Radiographers 2013: 3 & 4)*

Whilst radiographers were not specifically scrutinised during Francis's inquiry (Francis Robert 2013), the SCoR highlighted in their response to the report, that the provision of compassionate care should not remain exclusive to the nursing or medical professions (The Society and College of Radiographers 2013; Bleiker et al. 2016). The SCoR suggested that the recommendations made within the report should be applied across the entire healthcare workforce (The Society and College of Radiographers 2013). However, despite the SCoR's response (The Society and College of Radiographers

2013), I would suggest that on a clinical level, little consideration has been demonstrated by the radiography profession or the SCoR with regards to defining a contextually specific model of compassionate care explicitly underpinned by the 6C's ideology as promoted within nursing practice. The 6C's model of care is the amalgamation of six individual components of care into one framework (Figure 3.4) (Department of Health 2012a).

Figure 3.4 The 6C's of care - The Department of Health (2012).

CARE	Care is our core business and that of our organisations, and the care we deliver helps the individual person and improves the health of the whole community. Caring defines us and our work. People receiving care expect it to be right for them, consistently, throughout every stage of their life.
COMPASSION	Compassion is how care is given through relationships based on empathy, respect and dignity - it can also be described as intelligent kindness and is central to how people perceive their care.
COMPETENCE	Competence means all those in caring roles must have the ability to understand an individual's health and social needs and the expertise, clinical and technical knowledge to deliver effective care and treatments based on research and evidence.
COMMUNICATION	Communication is central to successful caring relationships and to effective team working. Listening is as important as what we say and do and essential for "no decision about me without me". Communication is the key to a good workplace with benefits for those in our care and staff alike.
COURAGE	Courage enables us to do the right thing for the people we care for, to speak up when we have concerns and to have the personal strength and vision to innovate and to embrace new ways of working.
COMMITMENT	A commitment to our patients and populations is a cornerstone of what we do. We need to build on our commitment to improve the care and experience of our patients, to take action to make this vision and strategy a reality for all and meet the health, care and support challenges ahead.

Whilst the 6C's are constructed as a nursing model of care, all the above fundamental values are applicable to radiography practice. However, whether these values are actively applied by radiographers in practice is unknown. Attempts have been made to define the constituents of compassionate care within radiography practice (Bleiker et al. 2016). However, the narrow radiography evidence base relating to care limited the Bleiker et al (2016) study to the generation of assumptions based on the perceptions of other professional groups and their practice. Bleiker et al (2016) concluded that the radiography evidence base needs to contain a better understanding of what it means to deliver compassionate care in the

specific context of medical imaging. Only then will the provision of compassionate patient care within radiography practice and education be truly informed by evidence (Bleiker et al. 2016), as per the SCoR expectations (The Society and College of Radiographers 2013).

Evidence based practice (EBP) is a practice model used within medicine and healthcare which integrates the best available research evidence with clinical knowledge, expertise and patient values (Snaith and Hardy 2007; Hafslund et al. 2008; Smith 2008). In an attempt to make EBP relevant to radiography practice, Hafslund et al (2008) proposed a definition of *evidence based radiography* (EBR) (Data box 3.23) which links the professional domain of radiography to the original models of evidence based medicine as introduced by Sackett et al (1996) (Hafslund et al. 2008; Smith 2008).

Data box 3.23

Supporting Data
'Evidence-based radiography is radiography informed and based on the combination of clinical expertise and the best available research-based evidence, patient preferences and available resources.' *(Hafslund et al. 2008: 344)*.

Whilst Hafslund et al (2008) and Smith (2008) address the benefits of EBP and EBR, little regard is paid to promoting the generation of an evidence base which places focus on care delivery. It is argued by Hafslund et al (2008) that before true EBR can be achieved, radiographers must increase their participation in research focusing on the development of practice in specific diagnostic fields. As in the work of Smith (2008), attention is placed on the development of imaging techniques and the identification of the best imaging modality for each medical condition in preference to reviewing the holistic experience of the examination from the patient and radiographer perspective. It is therefore proposed that to compliment the generation of a radiography technical evidence base, there is a need to develop an evidence base which places focus on the delivery of care that meets the needs of the

patient during diagnostic examinations. Only then can a service be provided which embraces all the aspects of EBR as proposed within the literature. As with the arguments presented regarding PCC, if the patient's preferences are unknown with regards to specific imaging modalities such as CT, then it can be argued that true EBR cannot be achieved.

With the radiography evidence base so lacking, radiographers are left with no alternative but to look towards professional documentation for guidance on providing care. Whilst the HCPC promote care which values the patient as an individual (Data box 3.24), the specific definitions of care in practice provided by the HCPC as standards of proficiency fail to support or represent a holistic care experience. Rather, they reflect dehumanisation and objectification of the patient by merely stating technical and task orientated processes (Data box 3.25).

Data box 3.24

Supporting Data
'2.3 understand the need to respect and uphold the rights, dignity, values, and autonomy of service users including their role in the diagnostic and therapeutic process and in maintaining health and wellbeing' *(HCPC 2013: 7)*

Data box 3.25

Supporting Data
'14.24 be able to position and immobilise service users correctly for safe and accurate diagnostic imaging examinations.' *(HCPC 2013: 16)*

The document (HCPC 2013) also brings into question how much knowledge the authors have regarding the radiography profession and actual practice. Despite having been produced in collaboration with the SCoR (HCPC 2013),

some of the statements included within the document may be interpreted as patronising to the radiographer audience (Data box 3.26).

Data box 3.26

Supporting Data
'13.18 be able to remove and re-apply dressings and supports appropriately and in a safe effective considerate manor.' *(HCPC 2013: 13)*

I would argue that whilst promoting professional practice to protect the patient, the HCPC are, through their language and construction of the text, undervaluing the role of the radiographer in the provision of patient centred care. This in turn has the potential to demotivate staff and impact on the generation of the positive working environment if interpreted negatively by radiographers.

3.5 Conclusions.

My interpretations are that quality care, as defined within the professional and legislative documentation evaluated during this document review (National Institute for Health and Clinical Excellence 2012; HCPC 2013; The Society and College of Radiographers 2013; Department of Health 2015a; Department of Health 2015b; HCPC 2016), is constructed around three equally relevant themes: Valuing the patient as an individual; autonomous professional practice; and positive working environments (Figure 3.5). However, it is believed that these themes are derived from generic, and perhaps idealistic, nursing models of care that may have limited application within radiology due to the transient nature of the care being provided within relatively short periods of time (Strudwick et al. 2011). The lack of evidence available to support the professional and legislative documentation has also led me to further question its application to clinical practice. On reflecting specifically over the contents of *guideline 138* from the perspective of a radiographer, I would argue that within the generic interpretations of the care experience, the notion that the 'statements of quality' as set out within the

document are ‘achievable’ (National Institute for Health and Clinical Excellence 2012: 5) is merely the opinion of the authors alone and is not viewed from a diagnostic imaging perspective. Whilst it is appreciated that the document has been produced as a source of guidance for all, the publication does not consider specific care environments such as CT imaging where time and patient interactions are both limited. Whilst it can be argued that NICE guidance is formulated from the best available evidence, research exploring patient experience within the field of CT imaging remains limited therefore, the evidence base used to construct *guideline 138* may be of limited relevance to the CT specific care environment.

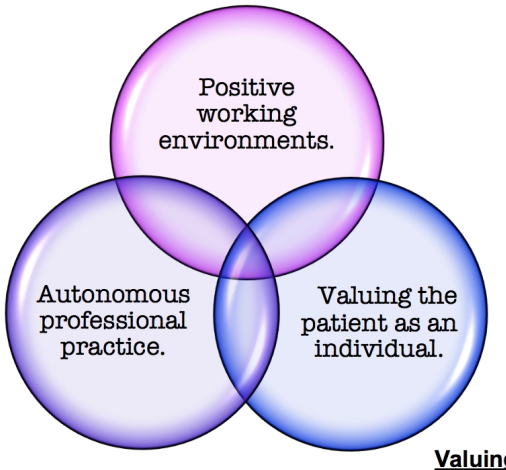
Whilst the rights, pledges, values and principles of *The NHS Constitution* and *The Handbook to the NHS Constitution* are purposely written in a style which leads the reader with a patient perspective into interpreting and believing that the authors are acting in the patient’s best interests through expressions of understanding, the fulfilment of the promises which are made relating to choice may not be as simple and straight forward as the statements imply. The consequence of this is the potential to generate unachievable patient expectations which have the potential to negatively impact upon the patient professional working relationship. Whilst additional information detailed within the *Handbook to the NHS Constitution* may influence the reader’s perceptions and expectations of care, these perceptions can be equally dependent upon past experiences and from the dominant viewpoint or persona the reader takes during these interpretations i.e. sick patient, carer, care giver or even tax payer.

Figure 3.5 Summary of the interpretations taken forward from the review.

The generation of positive working environments in which staff and patients feel:

- Supported
- Valued
- Trusted
- Empowered

A culture built upon candour in which feedback and complaint are used to improve and drive quality care and not as a source of vindication and blame.



Autonomous profession practice in:

- A culture where all are accountable for the quality of care they provide.
- Where professional staff practice autonomously in the best interests of the patient, making decisions regarding care based on evidence and reflective practice.
- Through the generation of positive working environments where radiographers are trusted and empowered to make care and imaging decisions based on the needs and wishes of individual patients.

Valuing the patient as an individual through:

- Autonomous professional practice.
- Effective appropriate communication.
- Listening to and respecting the needs and opinions of the patient during the examination.
- Valuing the role carers may play in ensuring the patients experience of the scan is the best it can be.
- Practicing compassionate, empathetic care and recognising the need to view the examination through the lens of the patient.
- The generation of a patient -professional relationship based on partnerships and mutuality.

3.5.1 Points Taken Forward to Guide the Adapted GT Development

- The radiography profession cannot dismiss the common sense ideals that are represented within *The NHS Constitution*. However, I would question whether some of the idealistic expectations defined within the document are achievable within fast paced diagnostic imaging environments.
- *The NHS Constitution* (Department of Health 2015b) and NICE guidance (National Institute for Health and Clinical Excellence 2012) do not consider the contextual or situational variances applicable to the many and diverse healthcare services within the comprehensive care institution that is the NHS.
- Factors constituting quality care within the radiography clinical environment are defined within an extremely narrow evidenced base (Bleiker et al. 2016) and may be misunderstood by other professionals and the public.
- Time to develop mutually respectful radiographer - patient partnerships is a luxury not afforded to modern imaging departments. Radiographers have reported a need to make conscious decisions to reduce the time dedicated to each individual patient to ensure fast and efficient services are maintained (Munn et al. 2014). The expectation of being imaged at the appointed time, or before, is of equal importance to the patient population as being treated with compassion and care (Hayre et al. 2016).
- Whilst the language of *The NHS Constitution* is positive and inclusive, the document itself appears far from equitable. Staff are instructed to behave in a specific manner, whilst patients are politely asked to show respect for those who are delivering care and services. It is noted that within *The NHS Constitution,* staff 'work for' *(Department of Health 2015b)* the NHS and 'serve' (Department of Health 2015b) the patients. With the service role being a traditional subordinate role in society, this has the potential to negatively impact upon the radiographer–patient relationship.

- Although *The NHS Constitution* may promise patient choice and information regarding diagnostic examination, the preferences of referring clinicians, technology availability and waiting times often dictate the choice of imaging modality to which a patient can be referred. It can be argued that the only choice open to the patient is whether to participate in the imaging selected for them or not to attend at all.
- From the radiographer's perspective there is an expectation that staff will undertake training and education to facilitate autonomous professional practice. Pledges made regarding the provision of such training may not be achievable at a local level in the current financial climate. Equally when legislation dictates that strict protocols must be adhered to, the level of professional autonomy that a radiographer may exercise may be significantly reduced.
- Broken promises and devaluing autonomy have been shown to reduce the quality of care provided to patients and consequently may negatively impact upon the patient experience (West et al. 2011; Maben et al. 2012).

3.6 Chapter Summary

This chapter has been purposefully included to make explicit the interpretations and constructions I made early in the research process, relating to how government and professional bodies relevant to radiography practice define and expect care to be provided. This piece of work prompted me to question the relevance of the documentation to practice within CT. I concluded that the models and expectations of care presented within the documents, can only be assessed against practice if we first know how care is constructed and experienced within the specific context of the CT clinical environment. In order to address this, I identified two additional lines of questioning which moved the research forward into phase 2 of the study:

1. How is care constructed, perceived and delivered by CT radiographers?

2. How is care constructed, perceived and experienced by CT patients?

Chapter 4: **Phase 2 Methodology – Grounded Theory.**

As described in chapter 2, following the initial CDA (Chapter 3), my focus made a shift towards understanding care from the perspective of those directly involved during the CT examination; the radiographers and the patients. I identified that before the radiography profession could fully understand and report on the quality or type of care radiographers provide, or evaluate whether the models of care relating to *The NHS constitution* and other guidance documents were applicable to radiography practice, there was a requirement to evaluate how care is actually perceived, delivered and experienced within the CT clinical environment.

Phase 2 was used to directly address sub questions 2-5 which are summarised in Table 4.1.

Table 4.1 Sub questions and aims of Phase 2.

	Question	Aims
Sub question 2:	How do CT radiographers construct, perceive and deliver care?	• *To identify what constitutes care from the perspective of diagnostic radiographers performing CT examinations.* • *To determine any influential factors which may determine the level of care CT radiographers are able to provide.* • *To identify how CT radiographers, define and perceive their role within the patient's diagnostic, treatment and care pathway.*
Sub question 3:	What factors influence and contribute to the CT radiographer's construction of care?	
Sub question 4:	How do CT patients construct, perceive and experience care?	• *To identify what constitutes care from the patient perspective.* • *To establish whether patients receive care that meets with their needs and expectations.* • *To identify where the provision of care can be improved and to highlight positive experiences of care.* • *To establish whether patients regard radiographers as caring professionals.*
Sub question 5:	What factors influence and contribute to the CT patient's construction of care?	

4.1 Introduction.

In the context of a research study, the purpose of a methodology is to stretch beyond a formal description of the methods of investigation and to provide an account of the rationale to support the choice of methods (Crotty 1998). This chapter will introduce and discuss the basic tenets of a grounded theory (GT) study, the methodological underpinnings of the GT method and provide the rationale to support the choice of GT when determining how care is perceived, delivered and experienced within the CT clinical environment. This chapter also provides examples of how the tenets of the adapted GT method were utilised during this study.

4.2 Brief Insight into the Development of Grounded Theory.

The inception of the GT revolution is attributed to the publication of a book entitled *The Discovery of Grounded Theory* by Barney Glaser and Anselm Strauss (Urquhart 2013). The 1967 publication challenged the existing quantitative orthodoxy which dominated the research arena of the time (Bryant and Charmaz 2007a). The book introduces and presents a method of qualitative inquiry which was used by Glaser and Strauss to conduct a study entitled *Awareness of Dying* (Glaser and Strauss 1965). *The Discovery of Grounded Theory* (Strauss and Glaser 1999) was defined by Glaser and Strauss as signifying the beginning of a *'venture in the development of improved methods for discovering theory'* (Strauss and Glaser 1999: 1).

Through the development of GT, Glaser and Strauss sort to provide clear foundations to facilitate a systematic form of qualitative research to provide understandable, empirical theories which could be used to reliably predict and explain human behaviour in a world dominated by positivist traditions (Strauss and Glaser 1999). It is argued by Bryant and Charmaz (2007) that despite actively positioning themselves against the traditions of the quantitative schools, Glaser and Strauss offered a method which in fact mimicked the quantitative traditions by developing a method which was *'the same but different'* (Bryant and Charmaz 2007a: 33). As Kelle (2005) states following a process which ignores existing knowledge and publications of the

subject under evaluation ironically represents elements of the positivist epistemology from which Glaser and Strauss were attempting to migrate. Throughout the proceeding decades, Glaser and Strauss continued to produce a series publications, each of which progressively developed and debated the GT method (Urquhart 2013). It was Strauss's collaboration with Juliet Corbin and the resultant publication of *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory* (Corbin and Strauss 1990), which lead to a 'cataclysmic split' (Urquhart 2013: 18) between the co-founders of GT in 1990. The subsequent diversification of GT generated two distinct strands (Heath and Cowley 2004; Urquhart 2013), 'formal' Glaserian GT (Glaser 2007) and 'substantive' GT (Glaser 2007), guided by the evolving frameworks of the Corbin and Strauss collaboration (Corbin and Strauss 2015). Heath and Crowley (2004) argue that instead of becoming weighted down with appraising and dissecting the merits and discord that exists between the two approaches, a novice researcher will benefit from the selection of a method which best suits their individual cognitive style. The individual cognitive style of the research study defined within this document is situated within the Corbin and Strauss epistemology, which views the GT method as a truly interactive process and permits a theoretical conversation to be initiated between the researcher, the data and prior knowledge of the subject (Corbin and Strauss 2015).

Unlike Glaserian GT which remains true to the original premise of GT as a predominantly inductive process, rejecting the involvement of literature until the full explanatory theory has been discovered and generated from participant data alone (Glaser 1996), Corbin and Strauss's GT method encourages the researcher to question data and generate theory through the verification of data with other data and relevant literature as analysis develops. Corbin and Strauss (2015) introduce and embrace elements of deductive reasoning as substantive theories become constructed during the analytical process. This holds relevance to this PhD study as the method allowed existing literature, and professional and legislative documentation, to be used as a data source to verify, challenge, and compare emerging concepts and theories during data analysis. Prior knowledge of the content of

professional and legislative documentation which has been gained through working as a diagnostic radiographer was, in addition, an integral part of study development. This directly contrasts with the analytical methods of Glaser who places full emphasis on theoretical induction until substantive theories have been generated from empirical data and it was felt that this approach would limit, and negatively impact upon, the way in which the documentation could be used during analysis to evaluate patient and radiographer perceptions against those who dictate practice. Glaser stresses that theories should emerge from the empirical data and should not be influenced or constructed via the inclusion of additional data sources pertaining to existing literature or the researcher's own preconceptions and/or opinions (Glaser 1996; Glaser 2002; Kelle 2005). However, as radiography practice is dictated and informed by professional and legislative documentation, adopting the pretence of having no prior knowledge of it, or its impact upon practice and patient expectations, would be unachievable. Whilst a comprehensive literature review (see Chapter 8) was conducted at the end of analysis to validate and question the resultant explanatory theory, the option of bringing the publications into the data analysis at any point provided an additional depth to the level of inquiry that was achieved (Corbin and Strauss 2015).

Heath and Crowley (2004), advocates of traditional Glaserian GT, raise concerns surrounding the adoption of Corbin and Strauss's approach. They argue that if a researcher engages in a process of analysis which is influenced by prior knowledge, existing literature and experiences, the researcher places themselves at risk of merely reaffirming existing knowledge rather than discovering new, elaborated and contextually significant explanatory theory (Heath and Cowley 2004). Of significance when making justifications against Heath and Crowley's argument is the fact that existing formalised knowledge relating specifically to patient care within CT is extremely limited and unknown, making the reformation of existing knowledge an unrealistic consequence.

Regarding Glaser's methods of data collection and analysis it was felt that, whilst allowing the unrestricted development of theory relating to patient care in general, the methods would fail to keep the study focused upon the area of interest which is patient care within the specific diagnostic imaging environment of CT. Another disadvantage of the Glaserian method is the confusing nature of the 'coding families' Glaser uses to classify relevant data during analysis. Without prior extensive training and an advanced understanding of sociological schools of thought, terminology, and sociological relationships, it was felt that the process of assigning data to specific coding families and combining families in a truly meaningful way would have been extremely difficult to achieve (Kelle 2005; Kelle 2007). Corbin and Strauss (2015) provide a more linear, pre-defined approach to the coding process during data analysis which is more suited to a researcher undertaking GT for the first time (Kelle 2007).

A third significant branch of GT has evolved from the founding methods of Glaser and Strauss. The term 'constructivist' has been coined in GT to acknowledge subjectivity within the method, and the researchers' influence on the construction and interpretation of the data (Charmaz 2014). Charmaz (2014), the driving force in constructivist grounded theory (CGT), views subjectivity as being inseparable from social existence. She expresses that accepting GT research as being *constructed* rather than *discovered* as suggested by Glaser and Strauss (Strauss and Glaser 1999), fosters researcher reflexivity regarding their own actions and decisions (Charmaz 2014). It is Glaser (2007) who openly criticises CGT as being too far removed from the purest forms of GT and whilst a method deviating from traditional objectivist research was purposefully sought for this study, it was felt that the CGT method as proposed by Charmaz (2014), had the potential to result in a predominantly narrative description of the experience of having or performing a CT scan, opposed to fulfilling the aim of the research which was to develop a theory identifying how care is constructed in the context of the CT examination. In view of the perceived limitations of CGT it was felt that Corbin and Strauss's approach (Corbin and Strauss 2015) to GT remained best placed to achieve the desired outcomes of the study.

4.3 Theoretical Sampling.

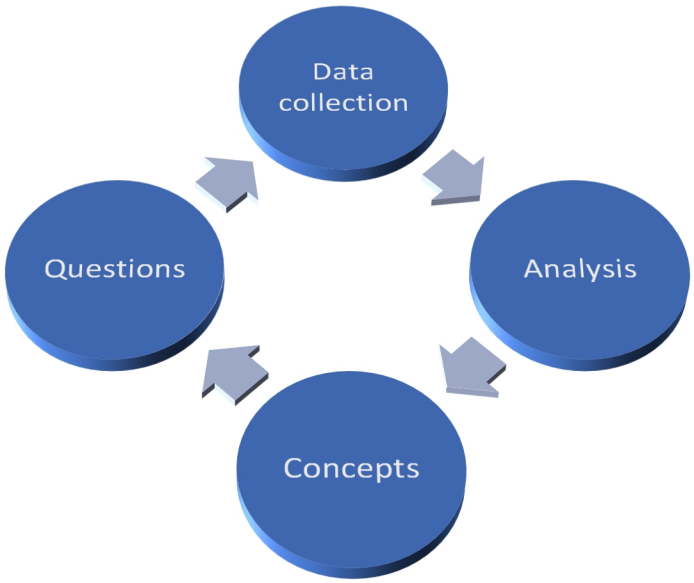
Theoretical sampling is a method of data collection particular to GT and is defined by Corbin and Strauss (2015:134) as: '*a method of data collection based on concepts derived from the data. The purpose of theoretical sampling is to collect data from places, people, and events that will maximize opportunities to develop concepts in terms of their properties and dimensions, uncover variations, and identify relationships between concepts*.'
It is the systematic logic behind theoretical sampling which is significant in distinguishing this method from other forms of qualitative inquiry (Charmaz 2014) and an element of the GT method which is suited to my own way of thinking. The appeal of a concept driven process was heightened by my role as a senior radiographer where there is an expectation for me to question practice based on my own prior knowledge of the subject area. Concept driven sampling enabled me, as a researcher, to expose and focus on concepts which were not only relevant to the questions I had raised during study development (see Table 1.1 & Table 4.1), but more significantly new and previously unconsidered concepts emerging directly from participant data (Corbin and Strauss 2015). In the context of this study the method also allowed the purposeful selection of research participants who were known to have the relevant knowledge gained from first-hand experience of the CT examination as either a patient, radiographer or both. Purposefully selected participants were able to provide relevant data to answer the research question and any additional emerging lines of questioning which became exposed as the study evolved. Theoretical sampling was therefore part of a complete process which served to guide the direction and content of this GT study.

4.3.1 Summary of the Theoretical Process

Within the overall process, initial data collection provides the researcher with a 'departure point' (Charmaz 2014: 197). Analysis of the early data leads to the generation of preliminary concepts which in turn raise theoretical questions of the data. At this point, further purposeful recruitment and questioning of the next participant or data source is deployed in the quest to

provide clarity to the data and to take the inquiry to a higher and more significant level (Corbin and Strauss 2015). This continued cyclical process (Figure 4.1) should then be continued until saturation is achieved (Strauss and Glaser 1999; Charmaz 2014; Corbin and Strauss 2015).

Figure 4.1 The Process of Theoretical Sampling (Corbin and Strauss 2015).



Saturation, as a concept, is defined by Corbin and Strauss (2015) as the point in the research when all major categories are fully developed, varied and integrated. Achieving data saturation goes beyond generating a list of concepts and themes. Instead it is imperative that the researcher defines any identified concepts in terms of their properties and dimensions (Corbin and Strauss 2015) (see section 6.3). This includes demonstrating how concepts may vary under different conditions whilst relating the differing concepts to one another (Corbin and Strauss 2015). It is the identification of the meaning attributed to each significant concept that becomes important when laying claim to saturation (Corbin and Strauss 2015). As Charmaz argues, it is the logic of theoretical sampling and the process of questioning the data that provides theoretical elaboration and refinement to the data whilst identifying the next source of data needed to answer the research question (Charmaz 2014).

4.3.2 Theoretical Sampling in Practice

A positive attribute credited to theoretical sampling is that it permits an open minded researcher to explore issues via multi directional perspectives, encouraging discovery and exploration of the collected data (Corbin and Strauss 2015). In relation to this study, it was the collection and analysis of data from both patients and radiographers that provided the multidirectional perspectives needed to identify how care is perceived, delivered and experienced within the CT clinical environment. The ability to compare data from a diverse, heterogeneous sample without compromising the fundamental methodological underpinnings of GT provides further justification for the application of these methods to fulfil this study.

Whilst each participant may have individual and situational differences in their accounts, many shared certain consistencies. Evidencing consistencies within the data was important to the development and verification of theory but equal emphasis had to be placed on the identification of instances where consistency was lacking (Morse 2007). In ‘negative cases’ (Morse 2007: 240) (i.e. participants who provide data that does not fit with the responses of others), Morse (2007) argues that the data themselves should not be dismissed as outliers. Instead they should be integrated into the emergent theory as they may provide new insight into an experience which may have otherwise been overlooked or taken for granted (Journal entry 4.1). This approach allowed the individual, left field constructions of events and interactions experienced during a CT scan to be heard and considered alongside those which were constructed and normalised as a consequence of being part of a specific group.

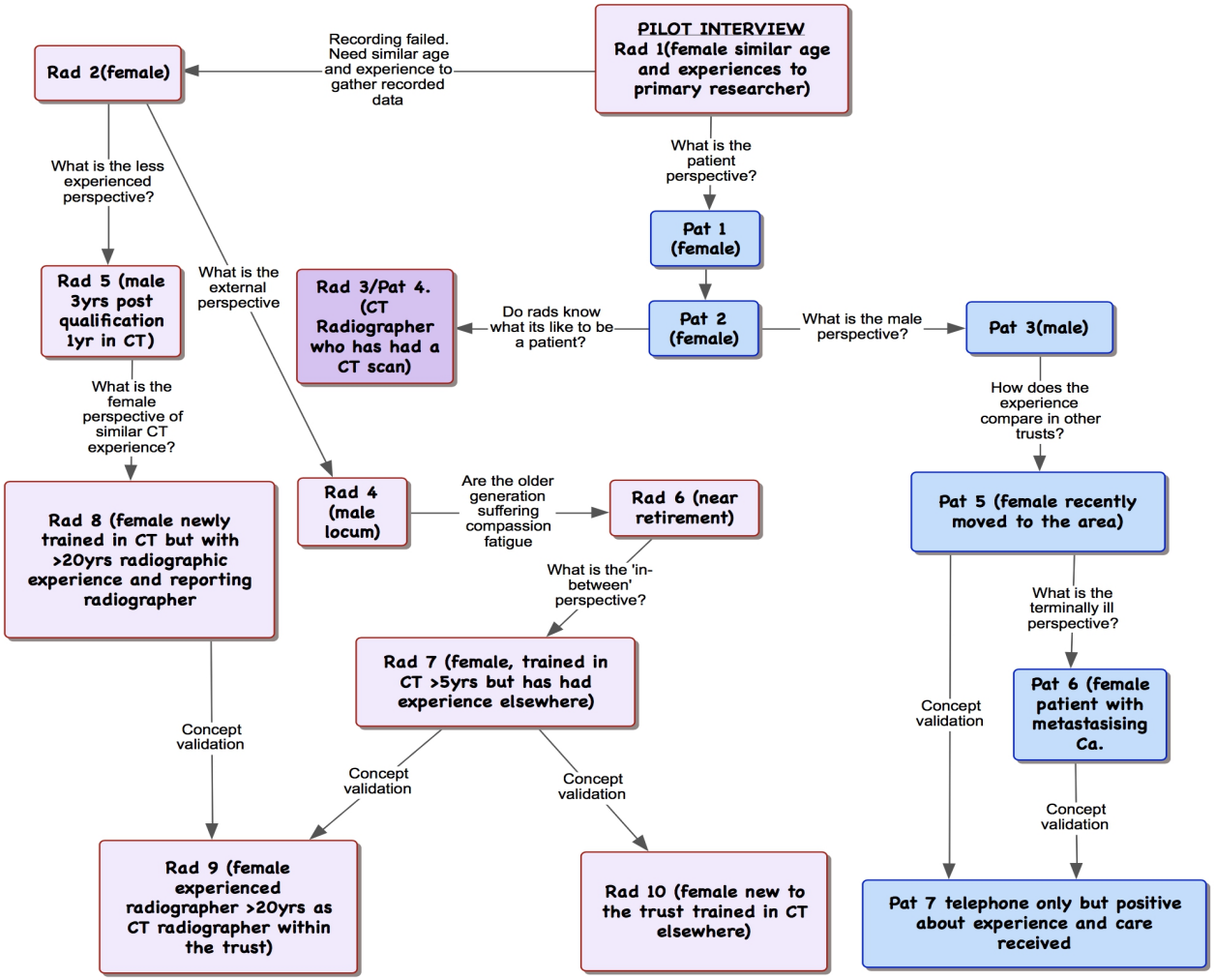
Journal entry 4.1 An example of a 'taken for granted event' exposed by the disclosure of an event not experienced by other participants.

Journal Entry
Date: 31-07-17 *This participant (Patient 2) did not want to use the interview as a platform to complain. However, she felt the need to share information relating to what had gone wrong and what could have been done better. She did not attend with the intention of complaining or to directly say how bad it was (My interpretation). She had appeared to accept the treatment as part of the process. She had a better experience the second time around and this appeared to overshadow the not so good aspects of the initial scan. It was only when she was reflecting on her experiences at the end of the interview (as Radiographer 1 did) that the severity of what had happened during the first scan and after the extravasation had occurred that the "bad bits" came out. If these points had been missed such as the description of "yanking arm down", then my interpretation of the events proceeding the extravasation would have been quite different as extravasations happen and can be part of the standard process. However, clearly the way they are dealt with may need to be considered further. Although I feel very bad when it [extravasations] happen during a scan, maybe I too have become complacent about the impact of such an event and have not considered how the sense of urgency that may ensue after an initial extravasation can come across or be interpreted as panic by the patient.*

In the context of this study, theoretical sampling has been used to successfully direct and complete the research. The full process of participant selection utilising theoretical sampling can be seen in (Table 4.2).

Following on from the document analysis, a pilot interview was conducted with a CT radiographer. Within Strauss and Corbin's applied approach to GT it is accepted that any significant data gained during the piloting of data collection tools can remain within the study to help guide the next stage of theoretical sampling (Corbin and Strauss 2015). The questions asked during the interview were constructed from lines of questioning that had arisen from knowledge gained during the CDA (Chapter 3). Although interview guides (Appendix 3 & 4) were generated as a tool to help maintain a focused and fluid interview, the expectation was that the direction of the conversation would be controlled by the data that the participant chose to disclose and any questions that arose as the interview progressed (Corbin and Strauss 2015).

Figure 4.2 The Process of theoretical sampling followed.



Unfortunately, the first recorded pilot interview became corrupt making its verbatim content inaccessible. However, a reflexive journal entry was recorded directly after the interview and has been included below (Journal entry 4.2) detailing the thought processes which directed the next wave of theoretical sampling in relation to the choice of participant and the questions to be asked.

Journal entry 4.2 Pilot Interview.

Journal Entry
Date: 03-01-17 *"When asked about her role as a CT radiographer the participant began by saying that she had been a radiographer for 21 years and had worked in CT for more than 10 years of that period. In hindsight, it would have been beneficial to have asked her what drove her to become a radiographer in the first place and to ask her why she had gone on to specialise in CT scanning. Obtaining this information would help to add context to the interpretations and add properties and dimensions to the concepts.* *In relation to the radiographer's role within the patient care pathway it was mentioned that 'sometimes the radiographer is just a person in a line of people' however, sometimes the participant felt that they were there to be a 'friend' even though they didn't know the patient in that way. She identified the radiographer as bridging the gap between the medical staff and other people, i.e. consultants and the patient's relatives, as an emotional support and an outlet for those feelings that they feel they cannot discuss with either medical staff or their own relatives. Here I believe it would have been beneficial to have asked the radiographer her thoughts on bringing relatives/ families into discussions about the examination. This is identified within the NHS constitution as being part of the provision of quality care that meets the needs of the patient and their families and careers. This may need to be considered in further interviews.* *In relation to what is done in everyday practice, protocols were mentioned but it was discussed that protocols can only take you so far and that practice is dependent on who you are working with or which radiologist is available/covering CT. The support that you have as to whether or not you can make decisions outside this protocol and the limitations these factors place on autonomous practice or the ability for someone to become an autonomous practitioner. Looking back on the interview I cannot specifically recall which question this was related to, but the protocols and the restrictions placed on radiographers were discussed.*

When discussing the results of the previous literature review and asking the participant about their own thoughts on the results, the radiographer participant began to talk about how radiographers were taught how to care in a 'black-and-white sense' but she felt that the way that radiographers provided care evolved and grew with experience. When I asked about this the participant said she felt that the care she was able to provide now and the level of support that she is able to provide to patients was completely different to what she would have been capable of doing as a newly qualified radiographer. She even expressed that if she had been faced with some of the situations that she'd had of late then she would have crumbled as a newly qualified radiographer. In hindsight it would have been good to have asked about specific incidents or experiences where this had happened.

I need to remember going forward with the interviews that when a participant mentions their practice in the context of what they do, I should ask them to tell me about those experiences or specific situations so that I can gain a full understanding of events that happened and what contributed to the events panning out in a way which they did. Finding out more about the impact of external factors on the way situations are dealt with would also have been beneficial and would have added more context to the analysis in keeping with the GT methodology and the identified philosophical stand point of the study.

Towards the end of the interview the participant said that she 'wanted to provide care, the same level of care that she wanted for her family and for her own relatives' and she believed that she provided care that patients wanted. However, after she had said that she then looked up paused for thought and said, 'at least I think that's the care they want but I'm not sure I know what they want.' I highlight this as being significant as it does show that radiographers are aware that the care that they are providing is what they think patients want and the only way that we can find out what patient want is by asking patients about their experiences and how they think their experiences could be improved. In Corbin and Strauss's systematic approach to GT this is very significant in that it now provides a lead which will direct further interviews which must include patients in order for that opinion to be gained. This will justify a strategic approach to data collection which is inclusive of patients and radiographers.

Although the radiographer participant did talk about new technology and the fact that technology was improving and that these technical improvements have increased demand, she did talk about the fact that the technology and improvements were allowing advanced practice to develop. I however, failed to ask her more about this or ask about specific cases where she felt the technology was helping to improve radiographers advanced practice. This is significant and should be revisited with the participant with her consent. I also failed to ask her directly about whether or not she felt the technology was improving care or was actually a barrier to care in the holistic sense. This is something

that needs to be explored in further interviews. I may need to be more specific about asking about the radiographer's feelings on the impact of the technology on the level of care they can provide and about asking patients their thoughts upon the technology and what the technology means to them, but I need to be mindful not to force the data.

POINTS TO ADDRESS MOVING FORWARDS

- More context relating to *Why radiography? Why CT?*
- What was missing from the interview was a more in-depth discussion about the actual role of the radiographer, what they do day to day in their role to establish what constitutes care and what the radiographer perceived as being care in relation to the CT examination and CT patient.
- Ask about how relatives and carers are utilised. What radiographer's feelings are regarding relatives and carers involvement during the examination?
- Ensure that participants are asked about/ to provide examples of events or experiences which will enhance the points they are making.
- Ask next radiographer participant her thoughts on technology and care.

NEXT INTERVIEW

- Identify a radiographer participant of equal experience to address above points.
- Identify a patient participant to address data collection gap relating to what care the patient wants and whether CT radiographers provided suitable care that meets the needs and expectations of the patients.
- Use 2 voice recorders!!!!!!"
- Write reflective notes directly after the interview.

One aspect of GT which remains fundamentally intrinsic and constant to all approaches regardless of the ontological and epistemological perspective of the research, is memo writing (Glaser 2007; Charmaz and Belgrave 2012; Charmaz 2014). As already identified, the memos written in the form of a reflexive journal after the pilot interview were invaluable to the data collection and preliminary analysis when the recording technology failed. At the very basic level memos have provided a record of the research and the analytical process followed. However the memos generated during this study have ranged from tightly constructed analytical statements to free text spontaneous thoughts which were combined into a journal auditing the research journey (Watt 2007; Charmaz and Belgrave 2012). Memos have been likened to an interactive space and place which lends itself to exploration and discovery (Charmaz 2014) and the formulation of memos during this study enabled the maintenance of a constant dialogue between myself as the researcher and the data during theory conceptualisation and generation (Gibbs 2013; Charmaz 2014). Each memo acted as a tool to stimulate and increase the abstraction of ideas and conceptual themes which

were pursued and questioned as part of the reflexive and comparative process (Charmaz 2014).

The disadvantage of having only the reflexive journal is that the events recorded following the technology failure are events that seemed significant at the time of the interview. It was noticed that the concepts which were documented were those related to the prior knowledge which had been exposed during the CDA and scoping literature review conducted as part of the wider study. Consideration must be given to the fact that these points were only remembered as being significant because they mirrored, or provided validation, to points made during the CDA.

During the research it became necessary to following up important theoretical leads which became exposed during analysis as part of questioning the data and my own position within the study (Corbin and Strauss 2015: 139). As the recruitment and questioning strategies continued through the study, additional journal entries were made relating to each interview. During analysis, lines of questioning were logged as shown in Journal entry 4.2 and incorporated into subsequent interviews as the study progressed. An overview of the full process is recorded in Table 4.2.

Table 4.2 Theoretical sampling – The development of questioning and thinking.

Date	Issues and further lines of theoretical questioning identified during analysis	Recruitment strategy needed to explore the theoretical questioning further.
04-07-2017	• More context relating to *Why radiography? Why CT?* is needed. • Missing from the interview was an in-depth discussion about the actual role of the radiographer, what they do day to day in their role to establish what constitutes care and what the radiographer perceived as being care in relation to the CT examination and CT patient. • Ask about how relatives and carers are utilised. What radiographer's feelings are regarding relative and carers involvement during the examination. • Ensure that participants are asked about/ to provide examples of events or experiences which will enhance the points they are making. • Ask next radiographer participant her thoughts on technology and care. • Radiographer expressed the wish to provide care that the patients wants, but on reflection identified that she did not know what this was.	• Identify radiographer participant of equal experience to address adjacent points. • Identify a patient participant to address data collection gap relating to what care the patient wants and whether CT radiographers provided suitable care that meets the needs and expectations of the patients.
21-07-2017	• Do patients feel rushed when the department is busy. • Where do less experienced radiographers situate themselves and how do they make patient care related decisions and judgements? • Do external radiographers express the same concerns relating to practice, lack of autonomy, time constraints and general working practices etc?	• Identify a patient participant to address data collection gap relating to what care the patient wants and whether CT radiographers provided suitable care that meets the needs and expectations of the patients. • Identify radiographer participant of less experience. • Identify and approach radiographer who have had recent external experience in CT. A locum radiographer would be ideal to provide data relating to several organisations and should have more of an impartial view.

Table 4.2 (Continued)– Theoretical sampling – The Development of questioning and thinking.

Date	Issues and further lines of theoretical questioning identified during analysis	Recruitment strategy needed to explore the theoretical questioning further.
31-07-2017	• Accounts are needed from more patients so that I can compare data • Ideally these will be patients who have also suffered extravasation however identifying potential participants who have had this experience is limited by ethics. • Participant stated that radiographers are the only ones who really know how you are going to feel during the scan. However, this is not true because I have not had a scan or the IV contrast myself. I do however know a CT radiographer who has, and it will be beneficial to recruit them and ask about their experience of having the contrast and to establish whether or not this has affected the way they interact and care for patients. • The interview data has highlighted, that when an extravasation occurs the sense of urgency that follows has been perceived and conveyed as panic both in reaction to the situation by the radiographers and their tone of voice. It will be interesting to establish how radiographers believe they act in these situations and what drives them to react in this way. Is it because they feel under pressure to get the examination done successfully and quickly? Is it guilt? Do they feel they will be judged? Is it panic? In this particular situation, compassionate care was lost in preference of getting the task done. • This participant experienced things prior to the scan and after the scan which I am terming as “catalysts to increased anxiety” this could be a theme to take forward. Although these issues are not directly related to the care received during the scan, they have influenced how the participant felt about having the scan and felt during the scan. • As this participant has had more than one scan and she has had completely different experiences in both there seems almost to be a “Russian roulette” of care and information provision/communication.	• Identify another patient of similar age and gender to compare accounts. • Identify a radiographer who has had a CT scan. • Address the topic of extravasations and what happens after an extravasation occurs with the radiographer participants in the proceeding interviews.

Table 4.2 (Continued)– Theoretical sampling – The development of questioning and thinking

Date	Issues and further lines of theoretical questioning identified during analysis	Recruitment strategy needed to explore the theoretical questioning further.
05-08-2017	• Do patients expect images to be reviewed by radiographers.? • Do you want more information re: x-rays radiation and risk benefits etc.	• Patient interview
15-08-2017	• Do radiographers have enough training and support to act in the "counsellor" role. To deal with patients who are experiencing grief or to support the dying/terminally ill? Experienced radiographers may say yes because they have had the experience and gained extra knowledge through experience to be able to deal with these situations. But what about those new to CT? Next participant needs to be a radiographer whose newly qualified within the CT environment and two has had limited experience with other modalities. • With regards to patients both 1 and 2 are conscious of the NHS being under pressure but how have they gained this knowledge? This needs to be addressed in next patient interview. This will need no specific selection other than somebody who does not work in the NHS. • Calm environment is clearly important to the patients. It is clear that a calm environment is part of the cardiac process but is this environment consistent during other scans. Patient 1 would say yes, up until the point of the extravasation, so this needs to be explored further and with more patients. Again, specific selection is not needed but it would be useful to gain opinions from a male patient because the environmental requirements may be different.	• male patient participant • newly qualified/newly trained CT radiographer • cardiac trained radiographer to discuss the difference in environment and the time available to facilitate the calm environment
21-08-2017	• Do the older generation care? Do they suffer from compassion fatigue and is it recognised by them? • How are developments in technology effecting radiographer worth? This may indirectly impact on quality of care if others are as deflated as (rad 5) regarding having hands on jobs taken away. • Do other male radiographers care in the same way or is this just because he is more experienced.	• Older experienced radiographer. • Male younger radiographer who will also be able to bring data re-experience and decision making in general.

Table 4.2 (Continued)– Theoretical sampling – The development of questioning and thinking

Date	Issues and further lines of theoretical questioning identified during analysis	Recruitment strategy needed to explore the theoretical questioning further.
30-08-2018	• I'd like to know if more patients are aware re: x-rays and radiation. Are the radiographers taking it for granted as they are not readily mentioning it or identifying radiation dose reduction as being part of the patient care process. Even I took it for granted when I was explaining the dose reduction principles and risk-benefit analogy to the patients during the interviews • Ask radiographers about extravasations and how it makes them feel and what happens during etc. • What is care? What does care mean to radiographers directly? • What constitutes care during a CT scan? Go back to the original lines of questioning. Don't run before walking so to speak. • How do you feel when patients call you nurse? Link to memo 26-09-17. • How do you deal with difficult patients? • Have you had a time when patients have broken down on you? How is that dealt with/ do you feel able to deal with that? • How do you cope with it? • Have you observed things relating to patient care that bother you? • Have you observed practice that you've adopted? • Patients: Where is their knowledge of the problems within the NHS coming from?	• Further patient and radiographer interviews
07-10-17	• How does it feel when targets aren't met?	• Further radiographer interview
12-10-17	• Do you expect to be told by radiographers that there is something on the scan? • Is there an expectation that the radiographers will bring pathologies to the attention of medical staff?	• Further patient interviews

Constraints introduced by NHS research ethics criteria restricted the amount of personal data that could be accessed prior to patient recruitment. As a result, identifying potential patient participants in terms of their age, medical condition, number of scans etc. was prohibited and it became clear early in the process that the lack of knowledge relating to each patient would have an impact on theoretical sampling (Journal entry 4.3).

Journal entry 4.3 Threats to theorectical sampling.

Journal Entry
Date: 28-07-17 *Something which has become apparent is that the selection of patients may not be as strategic as that of the radiographers. My knowledge as an inside researcher means that I have the advantage of being able to recruit and select radiographers with the level of experience, gender, age that I need to answer questions which are generate as the analysis progresses. Unfortunately, with patients I am limited to those who have responded to the expression of interest letter sent with their appointment. Ethical restrictions mean that I am unable to look at personal or medical details of the patient's other than that which they directly supply to me. This may impact on the data that I am able to collect and will place limitations on the GT theoretical sampling process. There are however no restrictions on contacting patient participants, if they are in agreement, after their interviews should questions arise that I think an individual participant will hopefully be able to answer.* *Another way to alleviate this situation if necessary, will be to send invite letters to specific patient groups or those who have had specific examinations. This however may need further ethical approval.* *(**Addition 18-08-17**: I have missed the obvious. Whist arranging potential interviews I have been able to communicate directly with participants and it at this point where I am able to obtain additional information to guide theoretical sampling. I was under the false impression that I need to collect data from the potential patient participants asap but as long as I keep them informed of the process I am able to generate a data base from which I can select patients that best fit my line of inquiry, rather than recruiting them blind just because they are patients).*

To help manage this, when contact was made with each patient prior to selection for interview, participants, with their consent, were asked to provide details about themselves, their background and their experiences in relation to CT (i.e. how many scans they had experienced) as part of the recruitment and interviewer- interviewee relationship building process. This resulted in a small pool of patients who were selected for each interview based upon who it was felt would be best placed to provide the data required. Whilst it is understood that the level of theoretical sampling with regards to the chosen

patients has been limited, the actual process of theoretical sampling during a GT study is as much about purposefully directing the line of questioning during the interview as it is about selecting a suitable participant (Corbin and Strauss 2015: 135). What remains significant is that the patients who were purposefully recruited and agreed to take part in this study had all had suitable experiences to enable them to provide data to generate and test concepts to answer the research questions (Corbin and Strauss 2015: 134).

A significant factor that needed consideration was that once patients were recruited onto the study; it was essential that they remained engaged with the process. In the real-world setting, adjustments had to be made which influenced the level of theoretical sampling that could be deployed. It was at times necessary to interview participants before full transcription of previous interviews had occurred. Equally, priority was given to the patient interviews over those of the radiographer as the radiographer participant group was more accessible. Good communication with both participant groups was essential to ensure that they remained informed regarding the GT process, felt valued within the study and remained engaged as participants. As described in Chapter 6. reflexive memos and journal entries were paramount to ensuring that the GT methodology was undertaken throughout the study, specifically at the times when more than one interview had to be conducted during any given day or week. This helped to maintain the integrity of the research as a GT study, whilst ensuring that the research remained practical and achievable.

4.5 Chapter Summary

This chapter has been used to provide a background to the history of GT and links some of the theoretical aspects of the methodology to the steps I followed during my research journey to bring the theory into practice. The chapter also highlights some of the problems I encountered and how they were overcome. Chapter 5 will describe in detail the data collection methods used to take Phase 2 of the research forward into data analysis and theory construction.

Chapter 5: **Data Collection Methods**

As described in chapter 4, theoretical sampling was deployed to ensure that sufficient data was collected from both patients and radiographers to address the aims of Phase 2. These aims were to establish how care is perceived, delivered and experienced with in the CT clinical environment. The following chapter will describe the methods of data collection used and will detail recruitment, participant selection, interview structure and associated ethical considerations.

The methods detailed within this chapter were submitted to and approved by both the University of Bradford and the NHS Healthcare Research Authority (Health Research Authority 2016) ethical approval panel. NHS HRA ethical approval was granted on 8th February 2017 (REC reference: 17/NI/0025; IRAS ID: 210173) (Appendix 5) and Trust confirmation of Capacity and Capability was granted on 1st March 2017 (Appendix 6).

5.1 Study Site

Recruitment was conducted at a single site University Hospital NHS Foundation Trust. As research studying both patient and radiographer populations within radiography is absent from the empirical evidence base, the option of adapting a proven set of data collection methods across multiple sites could not be considered as they did not exist within the public domain. Limiting the research to a single site ensured that a focused process of data collection and analysis could be performed, evaluated and adapted on a scale which was manageable to myself as a novice researcher and within the PhD time frame, whilst acting as a potential pilot for future large scale research study. In keeping with the evolving nature of GT, robust and complete theory construction was considered necessary before consideration could be given to testing the resultant theories presented within this thesis against a wider participant population from multiple, diverse NHS sites.

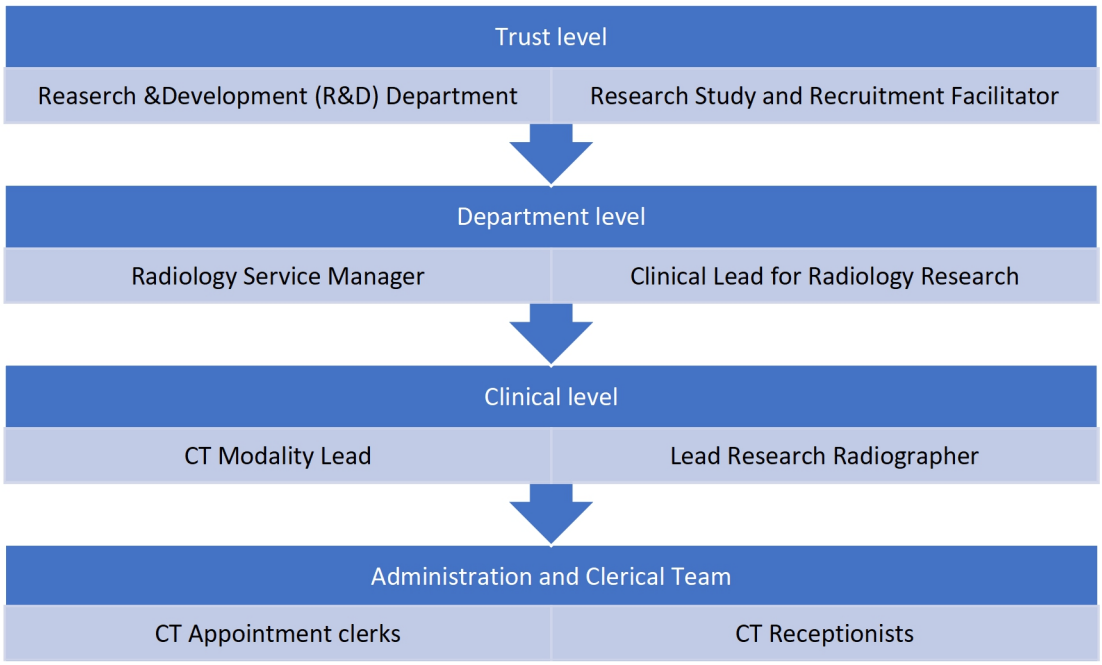
Whilst the host NHS Trust was primarily chosen as an accessible site for conducting this research on a part-time basis, the site is representative of an

average 1200 bed UK teaching hospital, covering a population of over 900,000 service users. The radiology department employs 30 radiologists and is one of three UK radiology academy sites. At the time of data collection, the department operated five CT scanners and performed over 40,000 scans per annum. The CT workforce comprised of fifteen band 6 radiographers, four Band 7 radiographers, the CT service lead and a locum radiographer. The CT department operated a 24-hour, 7 day a week service covering: the emergency department which had 131,242 attendances in 2017/18; outpatient and inpatient services; imaging for the clinical research network for the Eastern region; and acute oncology services who are offered same day imaging where possible.

5.1.1. Gaining Access

Following receipt of REC favourable ethical opinion (Appendix 5), management permissions were sort from the host NHS Trust. Each level of permission sort prior to the initial phases of recruitment are shown in Figure 5.1.

Figure 5.1 Gaining permissions.



Meetings were arranged with each member of staff detailed above to provide them with information regarding the study and the potential impact that involvement in the study would have on individuals and their departments. Developing and maintaining a good research relationship with not only the gatekeepers to the participants but with staff who would be needed to facilitate recruitment and radiographer participation was essential to the success of this research (Sheldon and Sargeant 2009: 169). The success of patient recruitment (see section 5.2.3) was especially reliant on the support of the appointment clerks and reception staff. However, their willingness to support the project and encourage the patients to take part in the research resulted in unexpected consequences which had to be addressed (Journal entry 5.1).

Journal entry 5.1 The unseen consequences of enthusiastic recruiters.

Journal Entry
Date: 10-08-17 *Another potential participant seemed a little confused about the study and why I was calling (but I also think I woke her from her afternoon nap). I am posting her the PIS and I will call her again as agreed once she has had time to read the information.* *Potential participant was emailed but his response did not make sense so I have tried to clarify things in a further email, however I am getting the gut feeling that he is not a suitable participant to pursue due to the conveyed confusion.* *I feel patients maybe blindly filling in the form because it's there. I need to be conscious of the fact that potential patient participants may still be vulnerable patients and this needs to be established before they are recruited onto the study and interviews are arranged.* *Thinking back on a conversation I had with one of the reception clerks, she said 'some people had not read or noticed the invite forms, so I've been asking them to fill them in.' I took this as being a positive and helpful action however on reflection, whilst the receptionist who was also responsible for sending out the invites with the appointment letters may have had the good intention of helping, I think maybe she is encouraging people to fill them in and they are because they think they have to and not because they want to. I need to be mindful of this when contacting them. On the plus side the enthusiasm shown by the ANC staff to help me should be and is recognised.* *Do I need to rethink the recruitment invites? Supply the info sheet at the time of the response being returned?* *Maybe a conversation first with the clerks is what is needed.*

5.1 Recruitment

5.2.1 Sample Size

Purposeful, theoretical sampling was necessary to enable the identification of suitable research participants who had the knowledge to enable the research questions (Table 4.1) to be answered successfully (Beitin 2012; Johnson and Rowlands 2012) and to facilitate the exploration of concepts which emerged from the data as the constant comparative data analysis evolved (Corbin and Strauss 2015). The size of the sample population needed to answer the research questions was however more difficult to predict (Foley and Timonen 2014). NHS HRA ethical approval procedures require the applicant to specify a fixed sample size. To comply with this requirement, a maximum number of 15 participants from each group (CT radiographers and patients) were identified within the ethics application. These figures were suggested as the absolute maximum numbers to factor in issues of the 'unknown' associated with interview research (Brinkmann and Kvale 2015) such as allowing for participant withdrawal and the emergence of unexpected themes requiring further investigation (Charmaz 2014). The actual number of participants recruited for a GT study should however be determined by theoretical saturation, (i.e. no new theories are emerging form the interview data during analysis (Corbin and Strauss 2015)). How one achieves saturation in the field can become contested when time constraints and recruitment options are dictated by ethical and educational review panels. It has also been identified by Beitin et al. (2012) that the perceived ‘gold standard’ by which purposeful sample sizes are determined in health science research (Beitin 2012) may be hampered by the lack of a clear definitions as to what constitutes saturation (Beitin 2012). The participant numbers used within this study (see section 5.2.3) have fulfilled the requirement to provide rich and purposeful data whilst keeping the amount of data generated manageable within the available time frame. The decision of who to interview and when was dictated and guided by the processes of constant comparative analysis and theoretical sampling resulting from questions raised during each phase of the analytical process as outlined in section 4.3.2 (See also Figure 4.2 & Table 4.2).

5.2.2 Radiographer Recruitment Strategy

As one of the aims of this study was to identify how diagnostic radiographers construct care within CT, it was essential for the radiographer participants to have suitable knowledge skills and experience with the modality of CT to enable them to perform the key decision-making acts and processes necessary to complete a standard examination. A summary of the radiographer participant inclusion criteria is summarised in Table 5.1. A decision was made to exclude the CT service lead from initial recruitment as this was considered a managerial position within the host Trust and fell outside of the original scope of this study. However, the ethics permissions included the potential to recruit managerial participants to ensure that should theoretical questioning guide the study in the direction of requiring a managerial perspective the option, although not utilised, remained viable.

Table 5.1 Radiographer Participant Inclusion Criteria.

Inclusion Criteria:
• Qualified Diagnostic Radiographers. • Trained in CT imaging. • Work regularly in CT (> 37.5hrs per month). • Work independently in CT. • Trained to cannulate & administer intravenous contrast media (IVCM). • Band 6-7.

The CT service lead was asked to email all potential radiographer participants who met with the above inclusion criteria as a means of introducing the proposed research to the radiographers prior to commencing the formal recruitment process. The email was used to introduce the study to the CT radiographers with a brief description of what participation within the study would include whilst not disclosing information to unduly influence or introduce bias into the study. Ethical approval granted permission for me to approach potential radiographer participants in person, enabling them to be issued with more details regarding the study and to be supplied with a *Radiographer Information Sheet* (RIS) (Appendix 7) if they were interested in

taking part. The potential participants were given time to read the RIS and asked to respond via email to express whether they wished to continue with recruitment. I contacted those who had agreed to take part either in person or in response to their email and explained the nature of a GT study so that each was aware of the theoretical sampling process and how it would dictate when or whether each participant would be interviewed. The inside researcher perspective was advantageous to the process of theoretical sampling as the level of experience and background relating to the radiographer participants was known. This meant that suitable participants were selected for interview at the appropriate point within the study to ensure that the lines of theoretical questioning were followed up in a systematic and purposeful manner (Corbin and Strauss 2015). The advantage of having direct unlimited access to a diverse group of CT radiographers meant that data collection remained natural and fluid (Asselin 2003) rather than being a forced process within a limited time frame.

5.2.3 Patient Recruitment Strategy

As the aim of this study was to develop a greater understanding of care from both the radiographer and patient's perspective, I felt that it would be beneficial to focus patient recruitment on those who were more likely to have experienced a range of interventions made by radiographers during their examination. This was to ensure that my data remained focused and manageable, yet broad enough to provide detailed concept and theory development. Relatively simple CT procedures, such as routine brain imaging, may only take 2 minutes with little intervention from the radiographers. Therefore, I felt that it would be more beneficial to focus recruitment on adult patients undergoing CT scans which included an injection of intravenous contrast media (IVCM) as a standard element of the CT procedure. Full patient inclusion criteria are shown in Table 5.2.

Table 5.2 Patient Participant Inclusion Criteria.

Inclusion Criteria	Additional Exclusion Criteria

• >18 years of age.
• Do not need interpreter.
• Have attended an NHS outpatient appointment for a CT scan.
• As part of the standard imaging procedure have been vetted to receive an IVCM injection.
	• Potentially vulnerable patients:
	  • Prisoners
	  • Mental health patients
	  • Care home residents

Potentially vulnerable patients were purposefully excluded from recruitment. Whilst research of this nature should be inclusive, I felt that I could not justify the inclusion of vulnerable patients within this study, nor the level of intrusion into their lives which would be necessary for data collection. One of the main drivers of this study is the lack of evidence relating to care within CT and therefore a baseline data set was required before specific areas of care relating to vulnerable patients should be considered.

The first wave of patient recruitment took place over an initial 12-week period. Appointments clerks were originally supplied with 100 patient invitation letters (Appendix 8) and instructed to include an invitation with the standard appointment documentation of the next 100 patients who met the inclusion criteria included in Table 5.2.

Each letter of invitation included a response slip which instructed the patient to hand the slip to the CT receptionist upon arrival for their appointment. To maintain confidentiality the personal information submitted by each potential patient participant was placed in a sealed envelope and locked in a draw on the reception desk until I was able to collect it. The reception staff were also issued with copies of the letter of invitation as a prompt to those patients who had forgotten to bring the response with them.

An alternative recruitment strategy of approaching suitable patients directly after their scan was considered but, after deliberation, I decided that the direct approach had a greater potential to influence the way in which radiographers would perform and behave on the day of the CT examination. A further consideration was that patients attending for diagnostic imaging are often at their most vulnerable and anxious about their health (Murphy 2001). It is not uncommon for patients to have received difficult news at earlier appointments on the same day as their scan therefore making recruitment at the time of imaging inappropriate.

Patients who returned the invitation slip and expressed an interest in taking part in the study were contacted via telephone or email. Where possible this was done within 7 days to ensure that patient engagement with the study was not lost. During these initial conversations I was able to explain the study in more detail and arranged to supply each potential participant with a *Patient Information Sheet* (PIS) (Appendix) prior to them making a decision on whether they wished to take part in the research.

The initial recruitment phase yielded 11 responses and resulted in the recruitment of 4 participants who attended for interview. As saturation had not been achieved a further 2 phases of recruitment were necessary. The full recruitment schedule is detailed in Table 5.3.

Table 5.3 Summary of patient recruitment.

Phase:	1	2	3	Totals
Date:	03.07.17	02.10.17	08.12.17	-
Sent:	100	50	50	200
Responses:	11	4	2	17
Recruited:	4	1	1	6
Withdrawal before interview:	0	1	0	1
Completed Interviews:	4	0	1	5
Withdrawal after interview:	0	0	0	0
Additional notes:	1 radiographer was selected for interview on account of her experiences as a patient, thus adding a further patient perspective to the total number interviewed.	1 additional patient declined full interview but wanted to express his satisfaction with the care he had received.	1 additional patient declined full interview but left email comments expressing her satisfaction with the care she had received.	Total number of complete patient perspectives collected at interview: 6.

As detailed in Table 5.3 a total of 5 patients were interviewed during this study. A further radiographer participant was selected for interview on account of her knowledge and experiences gained as a CT patient. This gave a total of 6 different patient perspectives which were analysed and interpreted.

Whilst the original aim of this GT study was to reach full theoretical saturation, participant engagement within the patient population was more difficult to achieve than had been anticipated. The host site covers a large geographical area and it was anticipated that some potential participants may not wish to travel to the hospital to take part in the research. As a result, the ethics application for this study did include an option to conduct telephone interviews in the event that recruitment to the face-to-face interviews proved challenging. Those respondents who declined a face to face interview were

offered the telephone option, but no potential participants took up this offer. The responses given would suggest that it was the length and depth of the interview itself which discouraged participation and not just the setting or medium through which it was to be conducted (Journal entry 5.2). This is a problem widely associated with patient interview research (The Society of Radiographers 2017). Lack of time and availability of the patient together with the desire of the patient to move on and not revisit their experiences have all been discussed as barriers to interview research amongst the patient population (The Society of Radiographers 2017). Recruitment from 'patient involvement groups' within the Trust was considered but the potential for these patient advocates to have become jaded, institutionalised or biased towards the Trust (The Society of Radiographers 2017) was considered to be too influential and therefore this recruitment strategy was discounted.

Journal entry 5.2 Interviews take up precious time at a vulnerable point in a patients life.

Journal Entry
Date: 10-08-17 *Contacted a patient participant via the telephone and although he said he wanted to be part of the research he hadn't appreciated how long the interview would be. He sounded quite frail and even though I offered a telephone interview he said that the time was just too long. He was very insistent however that I passed on how good the service was and that he had completed the invite so that he could tell someone who could say thank you to the staff for being so kind and responsive to him. People appear to be genuinely happy with the service, but I had underestimated how long an hour can be if you are not feeling well.* ***Addition from patient interview Date: 17-01-18*** *"no, I'm just happy you know time is valuable. Time you can't buy so I'm quite happy if I go in and out quite quickly" Patient 7.* *This validates how precious time is to patients who are terminally ill and that this is one of the pitfalls of patient recruitment.*

During the recruitment process I found that patient recruitment was more emotionally charged and draining than I had anticipated. Contacting members of the public via the telephone exposed a plethora of unexpected emotions evoked by difficult conversations with anxious and vulnerable people, a concept which is known to have a negative impact upon

recruitment and conduct during social research (Sheldon and Sargeant 2009: 168). As a healthcare professional, feelings of making unnecessary intrusions into people's lives at times of ill health, even though they had given permission for this to happen, was at times very uncomfortable and difficult to manage (Journal entry 5.3).

Journal entry 5.3 Unexpected feelings experinced during patient recruitement.

Journal Entry
Date: 02-08-17 *I have contacted participant who left his name and telephone on the response form. A lady who I am presuming to be his wife answered the phone and before I was able to tell exactly who I was she had passed me over to him, although she had expressed that she needed to check who I was because a husband doesn't deal well with nuisance calls. The potential participant seemed a little confused and unaware of the study. I confirmed with him that he had filled in response form and he remembered 'giving in a ticket'. The conversation was very uncomfortable, and I felt like he didn't really understand why I was calling. I explained to him the study in simple terms and what the study would involve and was stressing that it was his decision to take part and that if he chose not to take part it would not affect his care in any way. I asked him if he would like me to send some more information and again stressed that taking part or receiving the information was entirely his choice. He ended the conversation by saying that he'd rather not take part and I confirmed with him that I would destroy all of the personal details he had left me and that he would not be contacted again. This whole conversation has left me feeling very uneasy and I feel like he didn't understand why I was calling and that because his wife or the lady answered the phone and thought I was from the hospital (which I am but she wouldn't let me explain why I was ringing before she passed me over) that she may now be left wondering why the hospital had called. I don't know if I should be calling back or whether I should just leave it. This has reiterated to me that just because patients fill in the form it doesn't mean they understand why they are filling it in. I feel that maybe they are blindly filling in the form because it's there. I need to be conscious of the fact that potential patient participants may still be vulnerable patients and this needs to be established before they are recruited onto the study and interviews are arranged.* *This whole situation is now making me worry that I have caused problems and it will affect me moving forward when contacting other patients. Ringing them regarding the study is not as easy as I thought it would be and communication over the phone means I am unable to judge the situation from body language and facial expressions. It is making the whole idea of telephone interviews seem even less appealing. I feel like I have intruded on someone's life when they didn't really want me to.* Date: 03-08-2017 *It was only when I was having a debrief with [….] discussing how the telephone calls of yesterday had made me feel that it hit me that the patients, I am contacting may be very sick. Sounds ridiculous but I hadn't really considered or appreciated that the people I am trying to recruit are potentially very unwell. I have to consider that at the time of completing the form patients may not have known of life changing diagnosis or may not have begun treatments or undergone surgery. Even though they are of sound mind and classed as being able to consent they are still vulnerable.*

Journal entry (5.3 continued) Unexpected feelings experinced during patient recruitement.

Journal Entry
Yesterday the potential participant seemed to be trying to engage with me because he thought he should because I was from hospital. I wrongly presumed that all responses would come from people who were actively engaging with the research, but I think I was wrong. I did not prepare myself for the confused and sick patient and I feel that I have been very naïve regarding patient recruitment. It was not until I actually heard the words "you are ringing ill people" that the realisation hit that I have been blinkered. *Moving forwards, I feel that I will need to be proactive in saying that this is not a study/participating at this time they not be suitable for you. This in itself presents problems. I will be making a judgement and influencing the recruitment process. However, I do have a moral and ethical obligation to protect potential participants from undue harm in the form of additional stress which could impact on their well-being.* *At the moment, I feel that if I need more patient participants then may be approaching patient groups at the hospital is the way forward. This to prevent intrusion into the lives of people at a very vulnerable time.* *I need to discuss this further with my supervisors when we meet next week.* Date: 11-08-19 *This (See memo date 02.08.2017) has now been addressed with my supervisors and we had a discussion where they reflected upon events that they had encountered. I have learned from their experiences that people can be different on the telephone and I am now again more acutely aware of the fact that people may have changed with regards to their health condition in the time period between agreeing to take part in the study and to me actually contacting them.*

Whilst patient involvement within research projects of this nature is essential for the generation of true patient-professional partnerships within healthcare (The Society of Radiographers 2017), the impact this may have on both the researcher and the participant should not be underestimated during the development phase of a study and this was something I had not appreciated or mentally prepared for.

5.3 Interview Location

As the location of a research interview may significantly influence the dynamics of the interview and the data supplied by the participants (Herzog 2012) it was important to ensure that the interviews were conducted within a location which would not unduly influence or impact on the participants, whilst ensuring the safety of all involved. Although 14/15 of the interviews were held on NHS Trust premises to ensure the personal safety of all involved with the research activities, the interview location was away from the

radiology department, and whenever possible was in a building away from the main hospital site. It was essential for both participant groups to be able to talk freely about their individual experiences in order to address the research questions (Table 4.1) and to establish how care is perceived, delivered and experienced within CT. It was felt that being within the radiology department may directly impact upon what the participants were willing to disclose, and the way participants portrayed themselves and, in the case of radiographers their colleagues during the interview.

Consideration was given to offer the patient participants interviews within their own homes as this would limit the risk of increased anxiety associated with hospital environments. However, whilst this may benefit the comfort of the participants, the risks associated with lone working (Sheldon and Sargeant 2009) were deemed to be too high and unnecessary for this piece of work. As a suitable compromise, participants were offered the choice of public locations with private rooms closer to their homes. This ensured that no volunteers were excluded due to geographical constraints. As a result, 1 patient interview was conducted at a GP surgery close to her home as she lived some miles away from the host site.

5.4 Interview Structure

As individual constructions of an experience are different, it was important for the structure of the interviews to be relaxed enough to ensure that the participants were able to talk freely about what was important to them and what they do individually, or believe they do, as part of the patient care process but conducted in such a way that allowed significant data relating to the research aims to be collected. The use of the interview guides (Appendix 3 & 4) helped to ensure that the conversations were steered in an appropriate direction, whilst allowing the participants to be probed on specific subjects, and any emergent themes and concepts.

It was particularly important to allow the patients to talk freely about their experiences and any aspects of the experience that were important to them as individuals. This was done to help ensure that the constructions of care relating to the patient came directly from the perspective of the patient and not from a construction that those within the radiographer group *believes* to be true. It was felt that structured interviews would restrict the fluidity of the data collection and would serve to force specific data from the participants, essentially going against the very nature of a GT study (Corbin and Strauss 2015; Holton and Walsh 2017). Therefore, the interview guide (Appendix 4) was used to ensure that significant topics were addressed whilst allowing the patients to express any significant thoughts and feelings which were important to them. The fluidity of the resultant conversations exposed significant topics and concepts which were relevant to the patient population, but which had not been considered by the radiographers within their own constructions of care. These included the selfless desire of the patient to comply during the examination for the benefit of the radiographer and the differences in what patients believe to be significant in terms of their own health when compared to the perceptions of healthcare professionals.

As the radiographer participants were asked to talk about a subject around which I, as a CT radiographer, would have already constructed my own opinions and perceptions, it was important to ensure that no aspects of the

experience of providing care from the radiographer's perspective were taken for granted or unduly influenced by my own preconceptions and beliefs. As an inside researcher the requirement for me to remain sensitive to the participant's data was especially pertinent and therefore the interview guide (Appendix 3) became an invaluable tool to help maintain a fluid dialogue with the radiographer participants but which also guided them to provide relevant data to support or refute any interpretations I had made during study development, preceding the CDA and the subsequent data analysis which continued throughout the study.

All interviews were recorded using a digital voice recorder and transcribed verbatim. In order to encourage full emersion with the data a decision was made to self-transcribe the recorded interview files. Whilst the process was time-consuming, the benefits to the analytical process become evident during the very first transcription. Self-transcription allowed each interview to be cognitively relived and any spontaneous thoughts regarding the data to be directly recorded within the transcripts as part of the preliminary analysis (Sheldon and Sargeant 2009: 175). Full immersion with the data meant that analytical thoughts began to manifest spontaneously as self-transcription was performed. Self-transcription also made it possible to code and memo directly onto the digital transcripts in a free and unstructured manner which kept the analysis fluid and evolving and in keeping with the flexible style of GT advocated by Corbin and Strauss (2015). As the study progressed and further thoughts began to manifest, direct links to other participant data were noticed. Recording and following up on these emergent connections enabled the natural movement back and forth between the participant data as part of the constant comparative process.

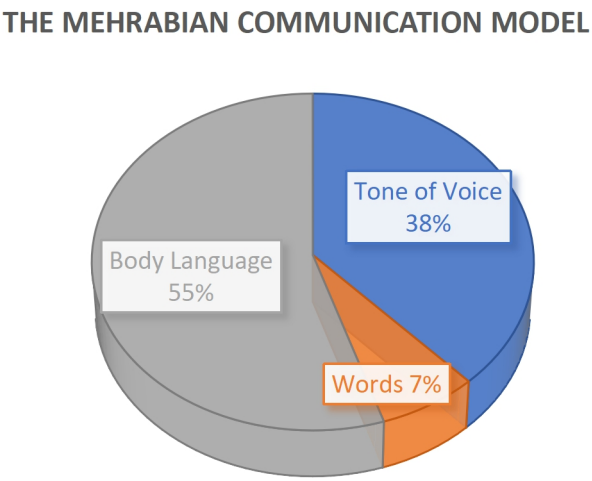
It was also noted that body language and tone of voice were very influential to the interpretations of the interview data (Journal entry 5.4). However, the advantage of being able to revisit the interview mentally during the transcription process added context and emotional properties to the data which would have otherwise been lost. Murphy (2001) also found non-verbal cues to be as important as that of the spoken word when interpreting

qualitative research interviews (Murphy 2001). A phenomenon explained by the Mehrabein communication theory shown in Figure 5.2.

Journal entry 5.4 This significnce of body language and tone of voice during data collection.

Journal Entry
Date: 21-07-17 *This radiographer participant was very passionate and emotional during the interview (heard in her voice) when she was discussing patient care and the way she interacts with patients during CT examination. This is something that was also noted in a previous interview (03-07-17).* Date: 21-08-17 *This radiographer presents as genuinely caring about people and appeared visibly brought down and deflated (mirrored by body language of Radiographer 2 on 21-07-17) when disclosing how he feels that he is letting the patient down because of time pressures. He appeared physically uplifted when talking about patient interactions and how it feels when a patient says it wasn't as bad as they thought.* Date: 25-08-17 *This patient interview was quite difficult in the sense that the participant did not finish sentences. Well…….. the thingy goes ye know… etc.* *Noted on transcript during transcription 30-08-17* ***Reflective Journal:** this participant has demonstrated the importance/advantage of being the interviewer, transcriber and analyst as there are many things that the patient has demonstrated using actions when they have struggled to find the word they want to use. If I were to analyse this data without having been present at the interview this would make no sense. Equally having the inside knowledge regarding the CT scanner, the process etc. means that this whole conversation makes more sense to me than it would to someone with no knowledge of the CT examination.*

Figure 5.2 Elements effecting the interpretation and construction of meaning during a conversation (Mehrabein 1972).



The Mehrabian communication model, demonstrates that only 7% of what we communicate consists of the literal content of the message i.e. the words used. The use of one's voice, such as tone, intonation and volume, take up 38% and as much as 55% of communication consists of body language. (Mehrabein 1972).

The advantages of being the interviewer, transcriber and analyst were most significant with the patient group, specifically with patient 6 who was living with brain metastases which affected her speech and word recall. Body language, facial expressions and actions were used to convey data when the patient was unable to find adequate words to convey meaning. This was also apparent with other patients who used actions when they did know the technical terminology associated with CT imaging.

5.5 Ethical Considerations

5.5.1 Consent

Informed consent is grounded in the principles of individual autonomy and beneficence (Marzano 2012). Written consent was taken and recorded using group specific consent forms (Appendix 10 & 11) prior to each participant interview. To ensure that all participants were able to provide informed consent (Marzano 2012; Brinkmann and Kvale 2015), the information sheets

provided to them prior to the interviews (Appendix 7 & 9) were designed specifically for each participant group. Whilst the radiographers' educational level was known this was not true for the patient population. To account for the diversity of the patient group, patient involvement was sought during the development of the Patient Information Sheets (PIS). This strategy was deployed to ensure that the PIS were informative yet suitable to send out to patients. Readability was assessed using the Flesch-Kincaid readability score (TheWriter 2016) and validated by a primary school teacher[1]. The PIS were targeted at a reading age of 12 years to accommodate educational variation amongst the target group. The information sheets were purposefully designed to contain enough relevant information to ensure participants were fully informed with regards to the study and how their data would be used whilst not unduly influencing or effecting the responses given during the interviews or the constructions of care each chose to disclose. Following the development of the PIS, an adapted version was designed for the radiographer participants. This was then reviewed by two non-CT radiographers to ensure that the content was appropriate for the professional group.

It could not be presumed that all participants would have a full comprehension and understanding of the information sheets prior to the interview or that they had read them in full. Therefore, the content of the information sheet was addressed and discussed before written consent was taken. This helped to ensure that the participants were able to make a truly informed decision about taking part without feeling any undue pressure to do so (Marzano 2012; Brinkmann and Kvale 2015).

5.5.2 Confidentiality

Confidentiality in broad terms and in the context of this study refers to the agreements made with participants as to what will happen to their data. In practice, maintaining confidentiality refers to the assurance that the identity of participants will remain unknown to all except the researcher (Kaiser 2012).

[1] Mr James Day. Primary school teacher. Bignold Primary School, Wessex Street, Norwich NR2 2SY.

To limit the potential for breaches in confidentiality, various strategies were deployed.

Throughout the study the General Data Protection Regulations (GDPR) have been observed at all times as per NHS employee regulations and in line with the Data Protection Act (2018) (*Data Protection Act* 2018). Radiographer participants were allocated a unique identification number beginning A and consisting of two numbers followed by the participant initials. Patient participants were allocated a unique identification number beginning B and consisting of two numbers followed by the participant initials. The intention of this was to aid the data analysis by enabling a mental link to be made between the transcribed data and the actual interview situation (Kaiser 2012). A list of names, interview dates and corresponding identification numbers were kept securely on a password protected computer. These were stored separately from any audio data files and electronic transcripts which were stored as encrypted files.

All identifying characteristics and data have been changed within this thesis to minimise the direct identification of the participants (Heggen and Guiillemin 2012). Consequently, within this document participants are referred to as *Radiographer 1-10* and *Patients 1-6* (Patient 4 being the radiographer who had experience of being a patient). To minimize the risk of deductive disclosure (Kaiser 2012) in publications and conference presentations the site under evaluation has and will remain anonymous, together with my professional relationship with regard to the radiographers which will remain undisclosed. However, in keeping with Strauss and Corbin's (2015) model of GT, my position with regards to the participants as a CT radiographer will remain explicit (Lillrank 2012; Charmaz 2014; Corbin and Strauss 2015).

The risk of deductive disclosure and restrictions placed on recruitment by the GDPR (*Data Protection Act* 2018) has limited my ability to provide the reader with specific study population demographics. However, a limited overview of the research participants can be viewed in Appendix 12.

5.5.3 Risks Benefits and Burdens

Whilst it was envisaged that there would be no direct risk of harm to the participants from taking part in the study, it was understood that talking candidly about issues related to professional practice, health and healthcare practice may expose or uncover unexpected emotions or feelings of anxiety (Brinkmann and Kvale 2015). It was made clear during the consent process that if this were to occur, the interview would be stopped, allowing the participants to discuss any problems or terminate the interview should they wish to do so. Although a minimal risk, the possibility of disclosure also needed to be considered (Heggen and Guiillemin 2012). Professional accountability and codes of conduct (HCPC 2013; The Society and College of Radiographers 2013; HCPC 2016) stipulate that any disclosure which may indicate potential or actual harm to a patient would need to be appropriately addresses and followed up as per professional guidance, UK legislation and local Trust protocols. Both participant groups were made aware during the consent process, of the consequences of making any such disclosure during the interviews. An agreement was also made to inform academic supervisors of any disclosure incidents which would need to be directly reported to the Trust. However, no such incidents occurred during the research interviews.

5.6 Summary

This chapter has provided a detailed description of the recruitment and data collection methods used during Phase 2 of this research. Whilst some of the processes followed were straight forward and intuitive, this chapter has also exposed some of the problems experienced during patient recruitment. This included the unexpected personal emotional consequences I experienced when recruiting patients at a potentially vulnerable point in their lives and healthcare journey.

To complete a successful adapted GT study, data analysis should be conducted simultaneously with data collection as part of the constant comparative method. Chapter 6 will describe the first steps of analysis necessary to build theory from the data.

Chapter 6: **Building the Theory Part I – Data Analysis**

Chapter 5 detailed the physical methods deployed and problems encountered during data collection and participant recruitment in Phase 2 of this research. Where possible data analysis was conducted simultaneously with the data collection as part of maintaining a constant comparative approach to analysis. The following chapters will provide an account of the processes applied during analysis to enable the systematic dissection and conceptualisation of the participant data (Corbin and Strauss 2015: 81).

This chapter will describe the coding processes used to identify and expose concepts inherent within the data and will go on to describe the development of the identified concepts into categories and themes. The chapter will also present supporting data to validate concept integration and category development. It must, however, be made explicit that the mental constructions, interpretations and analytical questioning involved during data analysis and theory construction were dynamic, spontaneous and emergent. Although, where possible, spontaneous ideas and lines of theoretical questioning were recorded within reflexive memos and journal entries, presenting the analysis as a linear report has been extremely challenging.

6.1 Introduction to the Analytical Strategy Followed

Any analytical strategy deployed when attempting to build theory during a GT study will be reflective of the way in which an individual analyst thinks and processes information (Corbin and Strauss 2015: 89). It is imperative for each researcher, including myself, to develop a personal repertoire of analytical strategies to ensure that intuitive, cognitive engagement with the available data is achieved (Corbin and Strauss 2015: 89). The resultant implication is that no specific method of analysing data can be prescribed when attempting to construct explanatory theory during a study of this nature. Whilst the methods of Corbin and Strauss (2015) have been used to guide and develop this study, the way in which the analytical strategies and tools were deployed during the research may be considered unique to this thesis.

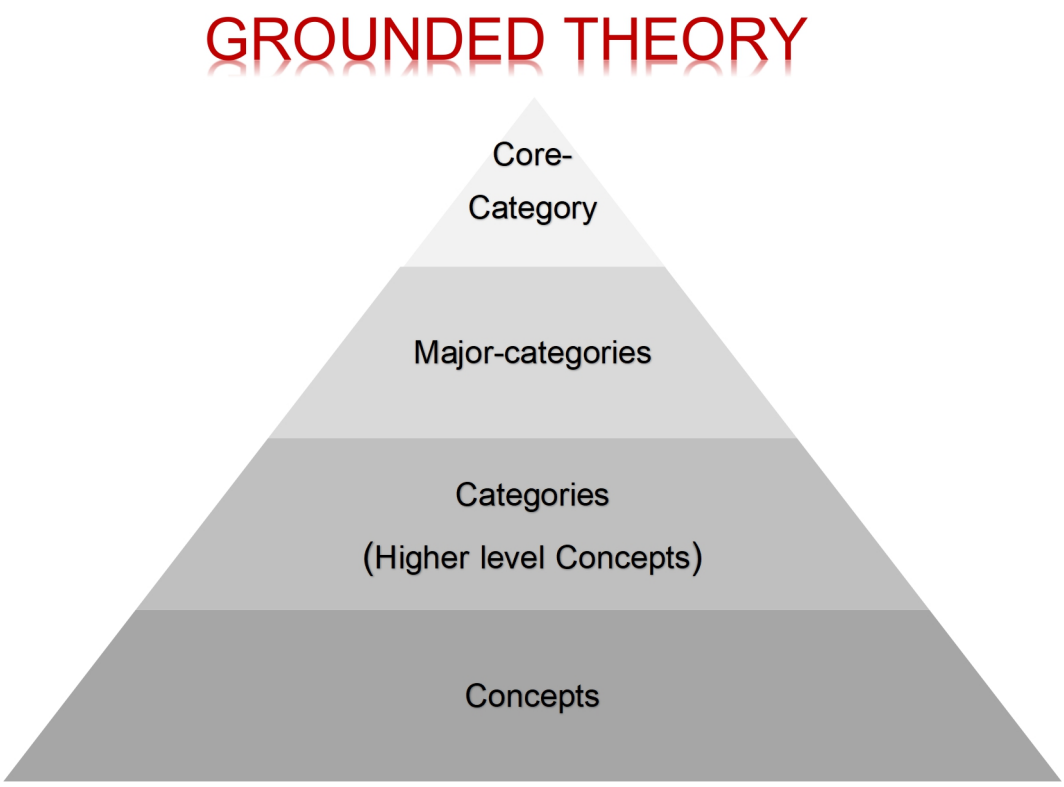
Corbin and Strauss (2015:81) define analysis as ‘the act of interpreting data for meaning’. The key terms used throughout this chapter are defined in (Table 6.1).

Table 6.1 Definition of terms as coined by Corbin and Strauss (2015: 220).

Term	Definition
Coding:	Process of delineating concepts to stand for interpreted meaning of data.
Concepts:	Words that stand for interpreted meaning of data, the conceptual name enabling researchers to group ‘raw data’ with other ‘raw data’ that share a common meaning or characteristic, such as a bird, kite, and plane that have flight in common.
Categories:	Higher-level concepts under which analysts group lower-level concepts that then become its subcategories. Categories are sometimes referred to as themes. They represent relevant phenomena and enable analysts to reduce combine and integrate data.
Properties:	Characteristics that define and describe concepts; e.g. flight has the property of duration. Duration of flight will vary from long to short depending upon the object that is flying.
Dimensions:	Variations within properties. Dimensions give specificity and range to concepts.

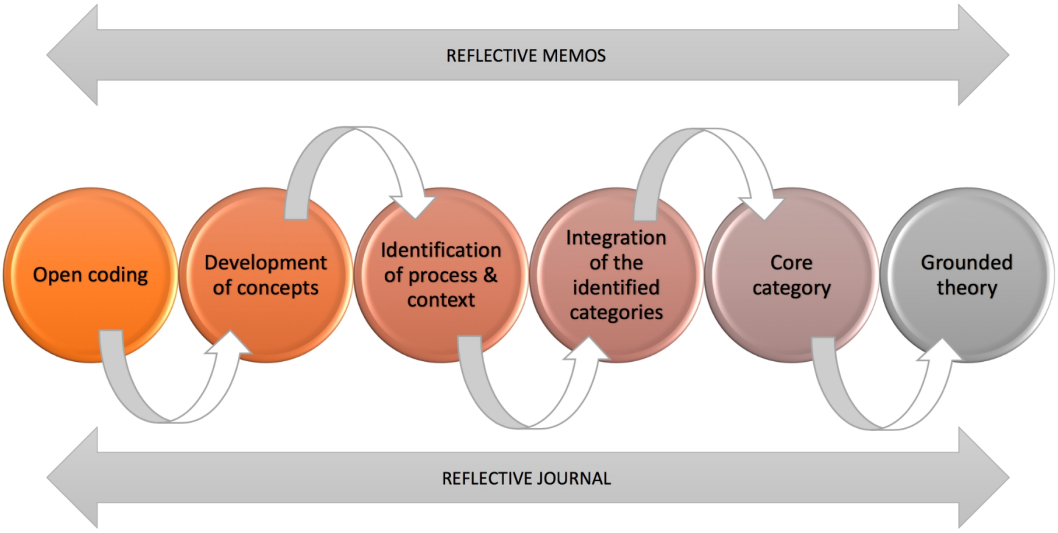
Corbin and Strauss (2015) describe the construction of GT as akin to the building of a pyramid comprising of varying conceptual levels, each stacked one on top of the other, becoming more concentrated as the pyramid rises towards the exposure of the theory. A visual representation of this model as adapted to guide this study is shown in Figure 6.1.

Figure 6.1 Constructing Grounded Theory – Adapted from Corbin and Strauss (2015:77).



In practice the construction of this conceptual model of analysis (Figure 6.1), involved a multifaceted, interrelated coding process consisting of: 1) open coding; 2) the development of concepts in terms of their properties and dimensions to generate categories; 3) the identification of the processes and the context in which events occur and; 4) the integration of the identified categories into explanatory theory (Figure 6.2) (Corbin and Strauss 2015).

Figure 6.2 The analytical process followed.



To ensure that the study remained true to the formal underpinnings of a GT methodology, it was imperative that the concepts identified during all phases of analysis were derived directly from the data and not applied to the data based on prior assumptions or beliefs (Glaser 1996; Kelle 2005; Glaser 2007; Glaser 2012; Corbin and Strauss 2015). Although the interpretation of each piece of data will have been influenced by my own professional and personal experiences gained as a radiographer, and by the knowledge gained through exposure to the literature and legislative documentation, the impact of these influences were recorded and reflected upon within journal entries and analytical memos which were amended and adjusted throughout the study (see Figure 6.3 section 6.2.1).

6.2 Coding and the Identification of Lower Level Concepts

Data coding was used as a tool to organise, manage and analyse the large amounts of participant data produced during each of the research interviews. The process of breaking down the interview transcripts into relevant and manageable segments of data whilst ensuring that significant data was not overlooked (Charmaz and Belgrave 2012; Corbin and Strauss 2015), commenced with the analytical act of *open coding* (Corbin and Strauss 2015: 220).

6.2.1 Open Coding

Paper copies of the data in the form of written transcripts were used to enable notes, initial thoughts and identified concepts to be written directly onto the data, enabling a spontaneous, visual representation of the analytical process to be recorded. An example from a working transcript has been included in Appendix 13. Individual paragraphs of each transcript were read and coded via the assignment of written labels, or *concepts*, directly onto each piece of relevant data. The labels used ranged from single descriptive words, to phrases used to describe what was happening within the data, how this related to the care process within CT and the way in which individuals constructed personal events and experiences. Table 6.2 has been included as an example of the labels applied to the first open coded transcript.

At this stage of analysis, the labels applied to the data were purposely abstract to ensure that concept identification stretched beyond a single incident or participant (Corbin and Strauss 2015: 76). As individual concepts provide the foundations to the theory building process and 'thereby ground the theory' (Corbin and Strauss 2015: 76), each concept had to be applicable across a range of data sources relevant to the study. This included other participant data and literary material (Corbin and Strauss 2015: 51).

Table 6.2 Labels applied to the first transcript to demonstrate initial concept emergence.

Interview ID: A02 Date: 02-08-17
Labels applied: • Them and us: Relationships • Role identification. • Protocol controlled practice. • Clinical responsibilities. • Accountability. • Decisions and actions influenced by experience. • Humour. • Team work. • Being caring. • Empathy. • Resilience. • Personal qualities. • Communication. • Negotiator. • Counsellor/Therapist. • Restrictions on care provision due to time constraints. • Prioritising care need. • Recognition that a patient emotions and reactions are complex and unpredictable. • Instinct vs experience when assessing need. • Building relationships with the patient. • Adapting technique to meet with patient needs. • Relatives and carers. • Struggle between providing care and meeting need, and getting the job done. • Consent. • Powerless to respect patient's wishes. • Interaction with technology. • Changing expectations.

Open coding was not limited to the application of labels onto the verbatim transcripts. The purpose of the GT analysis was to expose the meaning hidden behind the participant data disclosures whilst reflecting the thinking which has led to my own interpretations of the data (Corbin and Strauss 2015: 238). Analytical memos were generated to take the analysis beyond labelling the data with initial thoughts into a cognitive and reflective process (Figure 6.3).

Figure 6.3 Example of an early working analytical memo taken from reflexive journal records. NB: Printed memo became working copy for further hand-written additions as analysis progressed.

Memo 1.

Date: 01-08-2017

Concept: Them and Us: Relationships. (Working memo see paper copy for additions made on 18-08-2017)

Raw data:

"So sometimes you have to be firm with them. As well as, you know putting an arm around them give them a cuddle and a tissue and a you know letting them blurt out anything that they want which often they do." (A02 P3)

"yes, they might have small vessel disease but what can they actually can do with this patient." (A02 P5)

"no, we always have to go to a doctor, and it depends which doctor you see." (A02 P6)

"And I have questioned why we were doing it in the first place" (A02 P6)

" it's almost like the clinicians are just following a flowchart. The patient has these symptoms this is the route we go down, which often includes CT and other technologies and actually maybe if they spent a bit more time clinically you wouldn't need, like with elderly patients being sent down for scans which aren't really gonna change their outcomes if they'd have spent a bit more time with them clinically they wouldn't have maybe sent them for a scan." (A02 P7)

"All they see is us pressing buttons and moving boxes on a screen and then they ask us oh I don't know have they got a PE? We are not, we don't have a status of being able to report, we just, I think they just see us as button pushers and box jigglers." (A02 P8)

"the expectations have changed, of management trying to get you know we had our five-year plan and I think we delivered 133% or something and that wasn't good enough. So, it's that sort of mentality and you think bloody hell what else can we do. And then they send in out sourced agencies to come and assess the way we work and… I'm sorry I'm getting on my soapbox **RF**: no don't worry keep going **A02:** We have for years given examples of how we can be more efficient, and it's been ignored, and we have adapted our working, but we are the only ones who have adapted our working. We have not got the support in place. So they want seven-day working but they don't have seven-day support staff, so we are there and I do feel that sometimes you know as a detriment to patient care, whether it be patients coming down from the wards with ward staff who are then leaving their patients on the wards for the fact that we don't have nursing cover at weekends… Sorry I've lost my chain of thought and I was goanna say something else… Yeah and… These outside agencies saying well we can do the scans in 10 minutes instead of 15. But they're not addressing the real issues of how we work and are constrained by radiologist cover. That was deemed too bigger pot to open or Pandora's box to open, and so they can't deal with it. I think it's the radiologists have got a strong, sort of they're quite knitted together and they will stand strong, whereas I think we all just buckle and we just give in." (A02 P9-10).

"Because yeah, they just won't cut the lists. We did have one list cut last week but that was because we had to go to clinical governance." (A02 P10) *Coming across as lists only cut when it suits 'them'.*

"But you know they're looking at trying to improve, increase our cardiac capacity which

yeah it does need doing but? The way they're doing it they're trying to get more into a session so we are then having to work, you know get through more. But really they need to create more sessions. So, it's us adapting our work and no one else. So, it's really frustrating we just seem to say, "oh yeah, we'll do that, oh yeah we'll do that yeah." (A02 P11)

Memo analysis:
The use of the words 'them' 'we' and 'us' is clearly demonstrating an apparent 'them' and 'us' culture within the working environment. This is not only between the radiographer and the department/trust management but, between radiographer and radiologist, radiographer and clinician, and radiographer and patient.

The use of the word 'we' shows that this participant is identifying and positioning themselves as part of the 'radiographer' group (team ethos link with memo 8) however there are also some underlying divides within that group particularly between this participant and the younger generation. *Added 29-12-17 This is discussed within memo 187 (Knowledge practice gap).*

Needs to be addressed/explored further by conducting interviews with newly qualified newly trained CT radiographers. Within the context of the 'them' and 'us' culture the aim will be to identify whether or not the newly qualified radiographers situate/identify themselves within subgroups of the radiographer group or in fact they place themselves within the radiology group or in fact trust wide group.

The radiographer participant also appears to be identifying the radiographer 'we' as being a weaker group in comparison to the management 'them' and the radiologist 'them'.

Attempts to make staff feel included regarding decision-making are not being followed through and this is adding to the negative relationship between radiographers and management.

Undertones of an undervalued workforce not supported, and their best is not seen as being good enough.

Lack of empowerment. There is a motivation to improve efficiency but A02 feels ignored. It's a shared goal but something is missing within the relationship and this is impacting upon morale and positive outcomes for the patient.

No system leadership micro level silo management with no wider support.

CT team not radiology team and definitely not part of a Trust team. Separation and isolation.

No radiologist support for autonomy links this to wider problem highlighted by recent prescribing debate.

The local culture has changed. Radiologists no longer provide lunchtime CPD sessions etc. The focus on education has shifted to the radiology registrars but could the education provided to the reg's not be inclusive of radiographers? This is a 2-way educational relationship that is ignored but could bring so much benefit to patient care. No time allowed for attendance to MDT etc. Link to memo 32 CPD

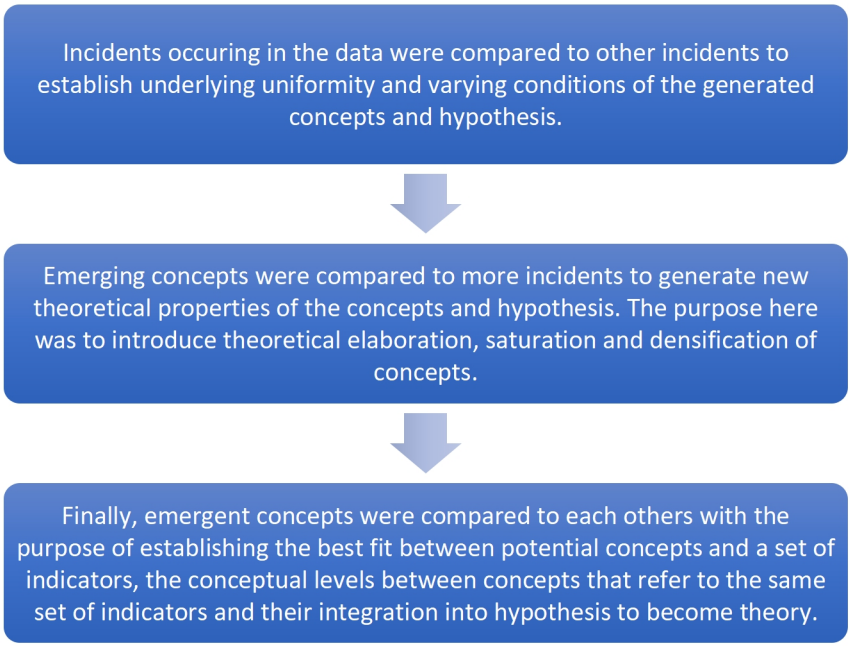
Memo Amendment (02-10-2017):
Many of the points here re them and us have been influenced by my own experiences within the department and from what I constructed during the document analysis. My pre-conceived thoughts have directed these interpretations and I need to step back and re consider the original research question: HOW IS CARE CONSTRUCTED WITH IN CT? These points may bring context into the analysis and explain behaviour but at this early stage I must not get bogged down in department politics.

It is argued by Charmaz and Belgrave (2012: 355) that the preliminary or sensitizing concepts applied to the data, during the open coding process, generally occur as a result of prior disciplinary knowledge. It was therefore essential to ensure that the relationship between the concept and my own pre-existing knowledge remained explicit within the analytical memos (Charmaz and Belgrave 2012: 355). As Figure 6.3 illustrates, each memo provided a record of linkages to other participants or incidents as part of the constant comparative method. Essentially whilst used to aid the organisation of the data analysis, open coding was also a platform used to identify and launch lines of enquiry which were pursued in proceeding interviews to formulate theoretical sampling.

6.2.2 Constant Comparative Analysis

Whilst comparative analysis pre-dates the development of GT, it was Glaser and Strauss who placed emphasis on continued reflection during analysis, which is formalised by coding procedures, the generation of categories and the writing of memos (Heath and Cowley 2004). The purpose of the constant comparative method is to establish whether the data themselves support any emerging concepts that the researcher applies to the data, thus ensuring that sensitivity is maintained. Running parallel to this is the process of developing further concepts whilst elaborating, integrating and substantiating the emergent concepts in terms of their properties and dimensions (see section 6.3). (Holton 2007; Corbin and Strauss 2015). The basic process behind the constant comparative method is shown in Figure 6.4.

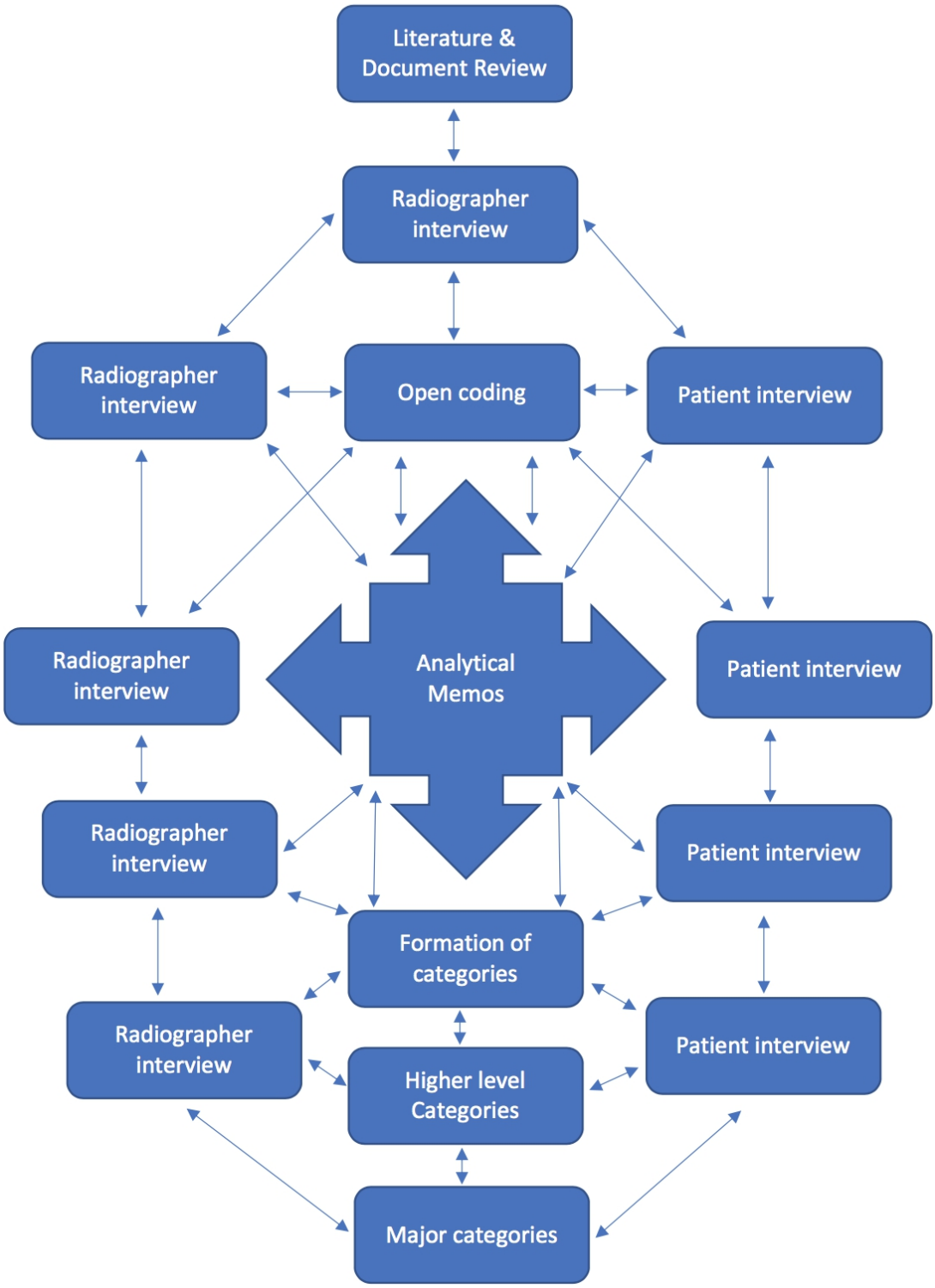
Figure 6.4 The process behind the constant comparative method (Holton 2007: 278).



It is Corbin and Strauss (2015) who stress that the analytical process deployed when conducting GT should be one which, like the process of thinking, should be relaxed and flexible. The process should be driven by insight gained through interaction with the data.

Following the preliminary analysis of each interview, the application of the constant comparative method ensured that previously coded data and memos were revisited and reviewed for consistencies or inconsistencies relating to an individual's representation of an event or process. These events were reviewed in relation to the participants' own data and to data supplied by other participants. Figure 6.5 provides a visual representation of how the constant comparative method was applied during this study, following the initial literature and document review presented in chapter 3. Figure 6.5 also illustrates how the interrelationship was maintained between coding, participant interviews, application of concepts and subsequent category development.

Figure 6.5 The interrelated steps used to facilitate theory construction.



As shown in Figure 6.5 the constant comparative method involved moving backwards and forwards through individual and multiple participants' data (Corbin and Strauss 2015: 93). As new concepts and linkages to other data were identified and elaborated, they were added to the paper transcripts and dated. Whilst a digital method, (NVivo) (QSR International Pty Ltd 2018), was trialled as a means to organise and manage the data, I found the digital platform too restrictive. Instead generating a hard copy of each memo allowed spontaneous thoughts and connections to be recorded on the paper files at any time, without the need to search through electronic files or fire up a computer. An example is included in Appendix 14. The production of the hard copies also initiated the physical grouping of related concepts/memos early in the analysis. Having dyslexia meant that I found the coloured free text on the hard copies to be extremely beneficial to the construction of visual memories and cognitive stimuli, which were easily recalled and utilised as additional transcripts were produced and analysed. The formal analysis was, as Corbin and Strauss advocate (Corbin and Strauss 2015: 89), a true reflection of my own cognitive preferences, style of thinking and reflection. Whilst some may find this approach to be disorganised and chaotic, I found the approach allowed me to think beyond what was known to me as a radiographer, and to interpret the experiences disclosed from the perspective of the participants. It also ensured that the deployment of concepts was validated by the participant data and not my own preconceived ideas about what patient care is or should be.

6.3 Development of Concepts in Terms of Their Properties and Dimensions

The initial acts of coding as described in section 6.2 served only as the groundworks from which the foundations of the formal theory building process originated (Corbin and Strauss 2015: 217). To take the analysis beyond the establishment of a list of descriptive words and statements, Corbin and Strauss (2015) advocate the development of identified concepts in terms of their *Properties* and *Dimensions* to bring depth and richness to the analysis.

6.3.1 Identification of Basic-Level Concepts

The constant comparative method was used to the identify conceptually similar incidents within the interview transcripts and to review and revisit the data to evaluate them for consistency (Corbin and Strauss 2015: 47). Incidents were coded with the same or similar conceptual labels to those identified within preceding data and prior interviews. This action facilitated the grouping of similar incidents together with conceptual names to form basic level *concepts* (Corbin and Strauss 2015: 76). Each new identified incident added to the general properties and dimensions of the concept into which it was placed (Corbin and Strauss 2015: 7). This action is identified by Corbin and Strauss (2015) as being significant to concept elaboration, whilst introducing variation into the analysis (Corbin and Strauss 2015: 217).

With the large amounts of data generated it was imperative that analysis remained focused on the development of concepts which were relevant to the evolving lines of questioning identified in chapter 3. Identified incidents were continually questioned during the analysis to establish whether they were truly significant to the research. An example came when a patient spoke at length about how unhappy they were with events that had occurred before and after their CT examination. These included the conditions in the waiting area and the length of time it took to get results. Whilst these events were significant to the overall patient experience and other participants disclosed similar data labelled as ‘poor waiting conditions’ ‘lack of privacy’ and ‘exposure to others illness’, the actual data identified as significant to the construction of care during the CT scan were the words: “once you were in the room it was fine” (Patient 3). Consequently, while issues and problems encountered by staff and patients before and after the examination may explain behaviour (i.e. may be a catalyst for increased anxiety before and after the examination), they do not specifically answer the questions relating to how care is perceived, delivered and experienced within the CT clinical environment. Further exploration of these incidents was therefore not pursued although their presence was logged as being potentially relevant to behaviours displayed during the CT scan.

A summary of the basic level concepts identified as being significant during early analysis are presented together with examples of the properties associated with each concept in Table 6.3. To bring a greater level of understanding and transparency to the data presented, examples of contextual factors and associated processes have been included within Table 6.3. To ensure that the analysis went beyond description it was necessary to link action and interaction to the conditions in which incidents occurred (Corbin and Strauss 2015: 217).

Table 6.3 Early identified concepts and their related properties, context and process.

Concept	Properties	Context and Process Indicators
Equipment operation	CT scanner Radiation exposures Post processing Injector operation	Adjusting exposure factors and technique for patient size and condition. Production of correct images. Production of diagnostic images. Production of best and most accurate images possible for the patient and clinician.
Imaging protocols	Correct scan Image assessment Further imaging	Assessing the request and establishing if the scan protocol will achieve diagnosis. Has the request been vetted correctly? Does the history match the requested exam/ is the examination appropriate? Image quality assessment. Is there a need for further imaging? Do the images need to be brought to the radiologist's attention? Should the patient be reviewed/ sent home?
Drug administration	Patient assessment (before and after) Extravasations Appropriate dosage	Patient sensed panic after extravasation. Calling doctor to assess patient after extravasation increased patient anxiety. Preventing extravasation by monitoring patient. Feelings of guilt when injection fails. Recognising and responding to reactions
Physical needs	Ensuring comfort Respecting dignity Patient transfers Relatives and carers	Taking time to ensure comfort. Covering with blankets. Cleaning soiled patients. Obtaining information and help from carers. Ask the patient how they can transfer.

Table 6.3 (Continued) Early identified concepts and their related properties, context and process.

Concept	Properties	Context and Process Indicators
Communication needs	Appropriate 2-Way Nonverbal Humour	Providing and receiving correct information. Listening/ felt listen to. Gaining trust. Putting at ease/ made to feel at ease. Patient sensed panic. Humour makes the experience less clinical (patient perspective) Humour as coping mechanism (radiographer & patient perspective. Humour makes the day/ scan go quicker. Radiographers value communication with the patient. Benefits of good communication are 2 way.
Emotional needs	Counsellor Negotiator Friend Confident Relationship building	Listen and advise. Outlet from relatives. Direct to support. Persuade. Reassure. Patient needs the scan and radiographer needs to get them through it. Need to put your arm around them/comfort them.
Compliance	Good communication is essential Patients actively comply	Patients undertake scan for clinician's benefit Patients want and choose to comply. Positive compliance to achieve the end goal. Patients view compliance as essential. Patients recognise they have a part to play in achieving accurate diagnostics.

Table 6.3 (Continued) Early identified concepts and their related properties, context and process.

Concept	Properties	Context and Process Indicators
Consent	IRMER 2017 Respecting patient's wishes Level of information	Lack of information. Conflict between respecting wishes and meeting clinical need. Radiographers feel powerless to respect patient wishes. Too much information can cause more anxiety. Scan is more important than radiation dose.

As interviews began with a radiographer participant the first concepts identified such as ‘equipment operation’ were related more specifically to the radiographer population. However, as the patient voice became added to the analysis, patterns began to emerge from the data to suggest that both the patient and radiographer groups shared similar expectations relating to the outcome from the CT scan and the role of the radiographer within this process. These expectations included the production of accurate diagnostic images to guide clinician decision-making and ultimately the patient’s treatment and wider care (Data box 6.1).

Data box 6.1

Supporting Data
“essentially producing the best diagnostic images, you can and also ensuring that the right diagnostic images are performed as well, to ensure that the pathways proceed clearly.” *Radiographer 8* “I was just thinking from the doctor’s point of view that they needed to find out more at that stage of my treatment.” *Patient 1* “Obviously it’s for your benefit. You want the right results.” *Patient 2*

The emergence of the similar concepts and expectations present within the patient and radiographer data, focused data collection and analysis towards questioning what was happening during the scan to achieve the desired outcomes and how radiographer and patient actions, behaviour and interactions were facilitating and influencing the outcome of the scan. By questioning the data in this manner, and through the physical act of re-arranging concepts and incidents into associated groups, the emergence of higher-level concepts (categories) began to manifest.

To keep the theory building process fluid at this stage of analysis, I found it extremely beneficial to visualise the identified concepts and their associated properties in diagrammatic form. It was also important for me to use a platform which permitted free movement of the basic-level concepts and their

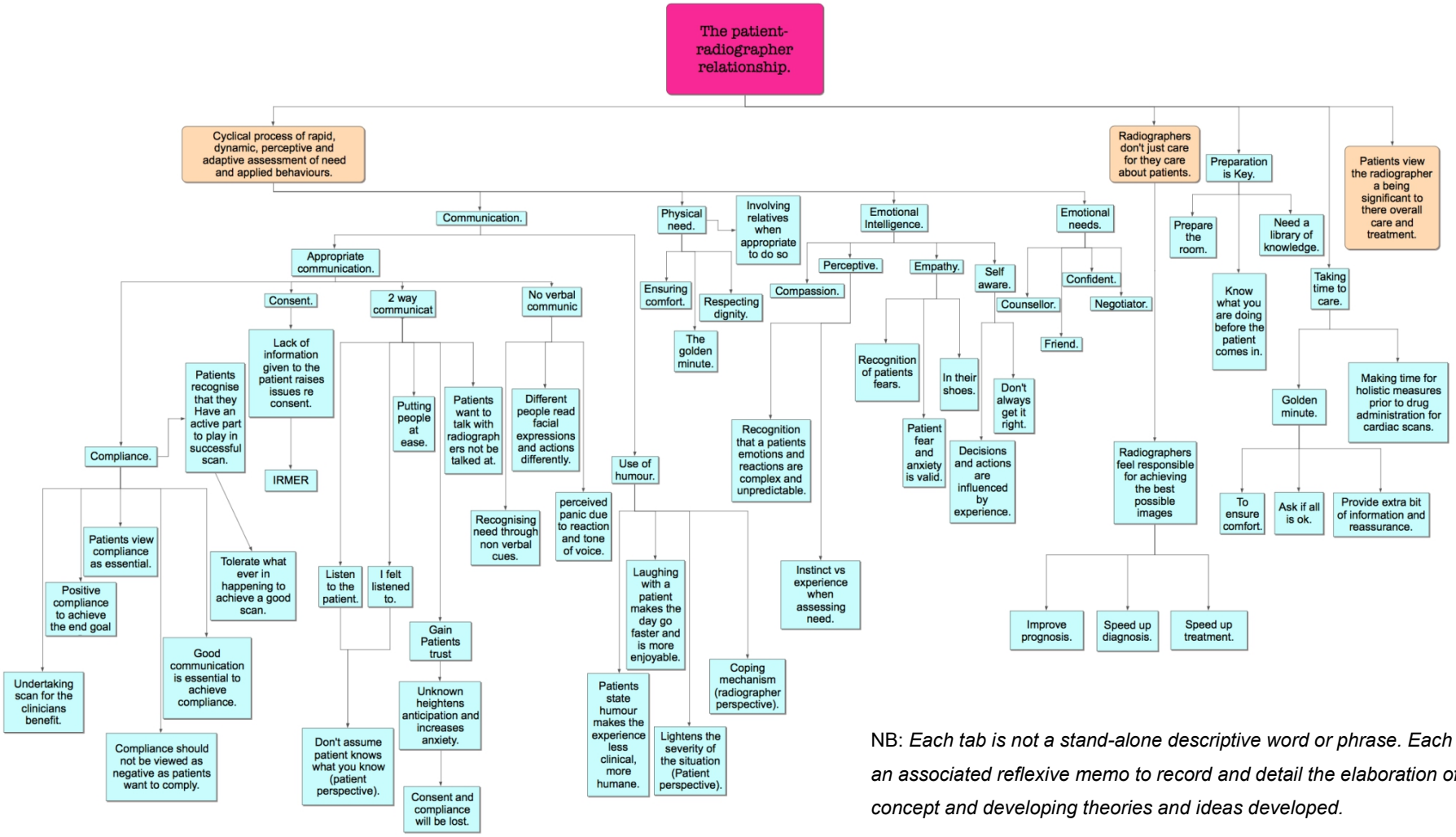
properties around the page to keep the cognitive analysis dynamic and truly immersive. Key concepts and their properties were transferred into a digital diagrammatic format using Inspiration 9IE software (Inspiration Software INC 2018). These diagrams were worked and reworked throughout analysis as a means to identify where gaps in the logic existed to justify the emerging category and theory development (Corbin and Strauss 2015: 300). The resultant diagrams (Figures 6.6, 6.7 & 6.8) transparently demonstrate how core concepts and categories began to come together to produce a ‘skeleton of a theory’ (Corbin and Strauss 2015: 300).

During integration, concepts became naturally grouped around three main themes relating to three core relationships manifesting within the data:

1. The patient radiographer relationship.
2. The relationship participants have with the technology.
3. The relationship the participants had with their own self(ves) at the time of the scan.

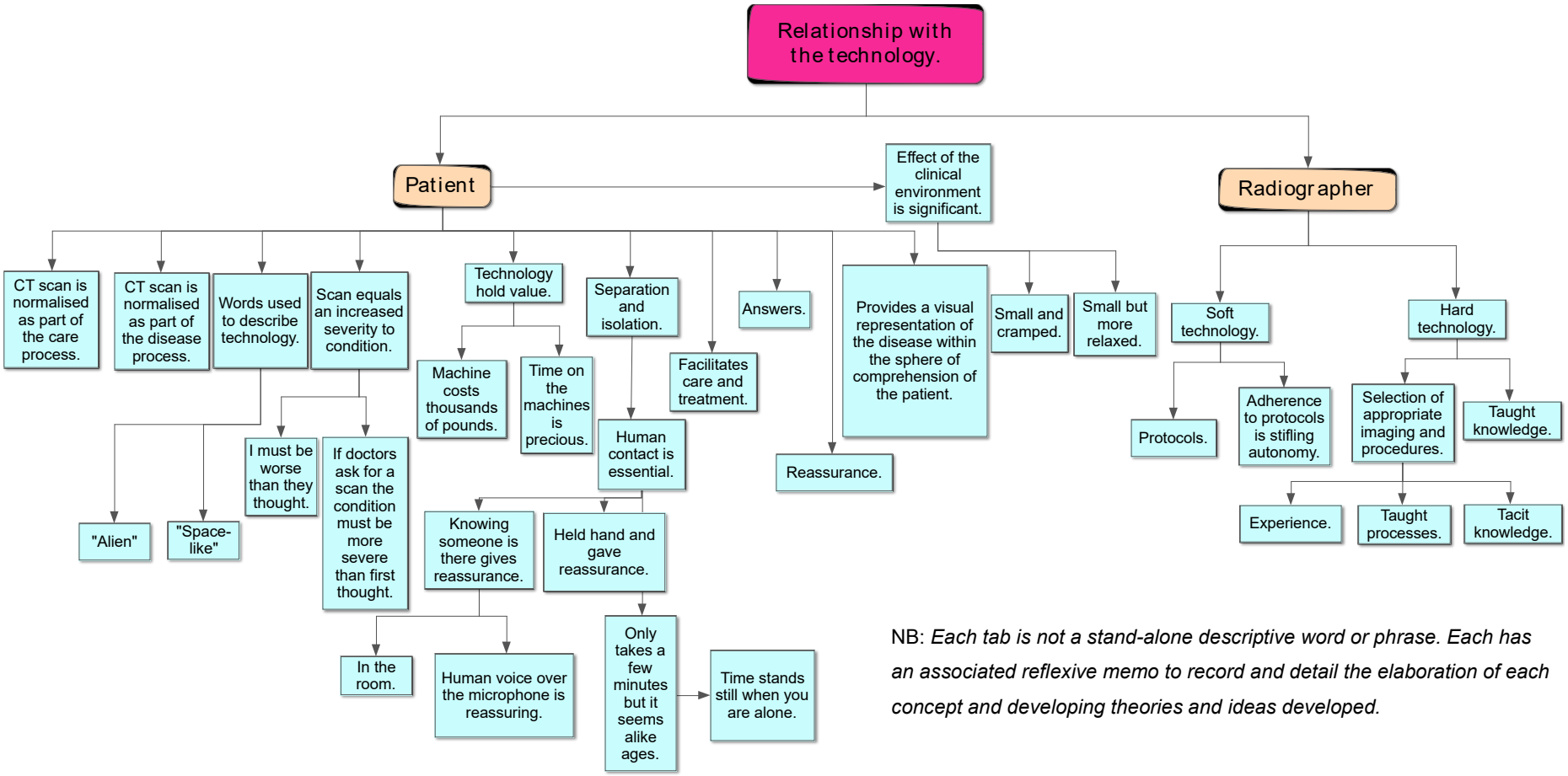
Each of the diagrams produced (Figures 6.6, 6.7 & 6.8) illustrate these themes and were used to stimulate further questioning of the data in terms of what was happening, why and under which conditions thereby providing the platform for category (higher level concept) development. The comments included in Figures 6.6, 6.7 & 6.8 are a combination of participant comments and the conceptual labels which I applied to the data.

Figure 6.6 Concept Integration: The patient radiographer relationship.



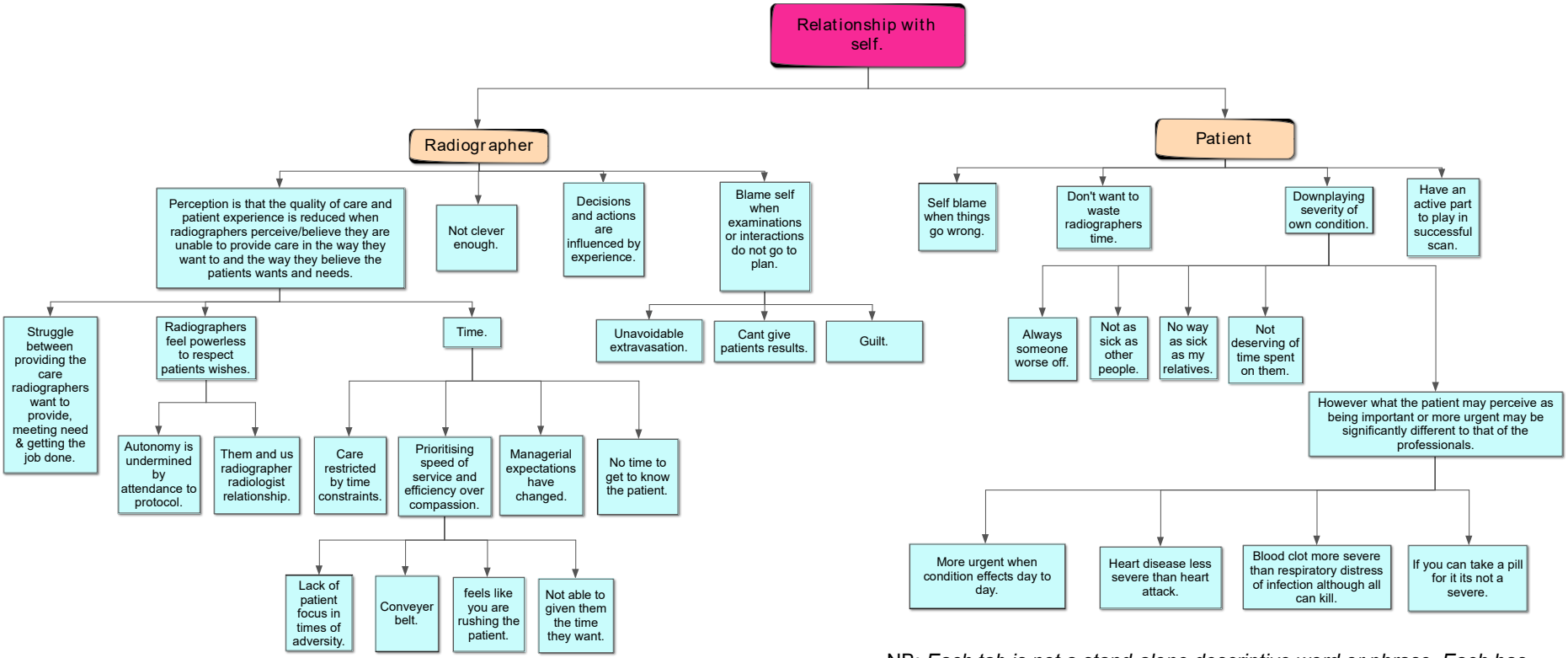
NB: *Each tab is not a stand-alone descriptive word or phrase. Each has an associated reflexive memo to record and detail the elaboration of each concept and developing theories and ideas developed.*

Figure 6.7 Concept integration: Relationship with the technology.



NB: *Each tab is not a stand-alone descriptive word or phrase. Each has an associated reflexive memo to record and detail the elaboration of each concept and developing theories and ideas developed.*

Figure 6.8 Concept integration: Relationship with self.



NB: *Each tab is not a stand-alone descriptive word or phrase. Each has an associated reflexive memo to record and detail the elaboration of each concept and developing theories and ideas developed.*

6.4 Category Development and Integration.

After considerable diagrammatic re-working and theoretical questioning, personal brain storming and hand drawing of diagrams (Appendix 15 & 16), four categories or higher-level concepts emerged from the participant data:

1. Radiographers care about patients.
2. The patient's relationship with the technology.
3. The radiographer's relationship with the technology.
4. Patients value the radiographers.

During category development it became apparent that the concepts recorded within Figure 6.8 under the heading *relationship with self* were concepts which elaborated the analysis with context and explained behaviour patterns rather than providing the foundations for the development of a stand-alone category.

To provide clarity to the construction of the 4 conceptual categories above, the following section will present the underpinning concepts of each category, together with examples of the raw data identified to validate the presented interpretations. The aim of presenting the findings in this manner is to demonstrate how each concept is grounded within the participant data collected during this study.

6.4.1 Category 1: Radiographers Care About Patients

The first of the identified categories is constructed via the integration of 6 basic level concepts (Table 6.4).

Table 6.4 The concepts of category 1.

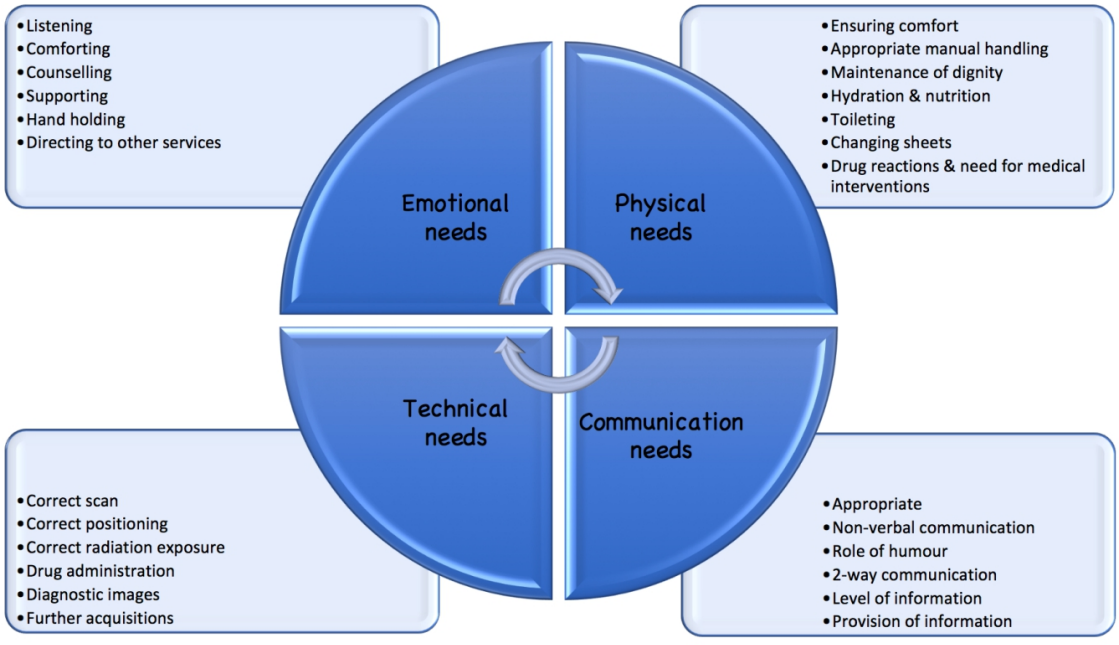
Concept	Properties
Physical needs.	• Ensuring comfort. • Appropriate manual handling. • Maintenance of dignity. • Hydration & nutrition. • Toileting. • Changing sheets. • Drug reactions & need for medical interventions.
Emotional needs.	• Listening. • Comforting. • Counselling. • Supporting. • Hand holding. • Directing to other services.
Technical needs.	• Correct scan. • Correct positioning. • Correct radiation exposure. • Drug administration. • Diagnostic images. • Further acquisitions.
Communication needs.	• Appropriate. • Non-verbal communication. • Role of humour. • 2-way communication. • Level of information. • Provision of information.
Beyond the button pusher.	• Negotiator. • Advocate. • Counsellor. • Friend. • Therapist. • Comforter.
When radiographers feel unable to care.	• Time constraints. • Powerless to respect patient's wishes. • Lack of knowledge.

The first four concepts identified in Table 6.4 to elaborate category 1 focus on need. The four elements of need in the clinical setting are closely connected and are therefore presented under a single category heading of Needs.

6.4.1.1 Needs- Physical, Emotional, Technical & Communication.

Data provided by participants across both patient and radiographer groups (Data box 6.2) suggests that there are four interconnected categories of need identified as being significant to the construction of care during a CT examination (Figure 6.9). Whilst 3 of these concepts (emotional; communication; and physical needs) were identified during early analysis (Table 6.3), the 4th concept, technical needs, emerged during category development. Early coding (Table 6.3) also identified drug administration as a stand-alone concept. However, with the identification of additional incidents, the properties associated with the concept drug administration became interpreted as being significant to the technical and physical needs of the patient. Therefore, an amalgamation of these previously identified properties into the developing concepts of need occurred.

Figure 6.9 Concepts of need identified from both patient and radiographer data.



Listed behind each quadrant of need (Figure 6.9) are the identified properties substantiating each individual concept. It is important to note that many of the properties are interpreted as actions pertaining to the experience of providing and receiving care during the CT examination, thus adding context and process to category development (Corbin and Strauss 2015: 153-186).

As identified by Joan Tronto and Bernice Fisher in 1991 (Tronto 1993: 107) ‘care is about meeting needs’ and is relational to the context and environment in which it is provided (Tronto 2013: 4). It can therefore be argued that, the actions taken by radiographers to meet patient needs are a demonstration of care provision in the specific context of the CT examination. A focused literature review exploring published theories of care and care provision was conducted to validate and elaborate the data and developing theory construction as presented within this document. The full review is included in chapter 8.

Data box 6.2

Supporting Data	Need
“I think whatever type of scan or whatever treatment you have, to be made to feel that you are very well informed of exactly what is going to be done to you. And that you can ask any question and not be thought to be silly and that they can have the time to explain to you.” *Patient 1*	Communication Emotional
“I think because they were quite kind and quite helpful in making sure that I was comfortable and you know doing all the things to make you, put at ease yeah. But if that hadn't happened you know if she hadn't have put that thing under my knees, realised I was uncomfortable and if she had never offered the blanket because it was cold, all of those things would have, if I'd have been rushed definitely I couldn't have coped with that as well as I did.” *Patient 2*	Physical Communication Emotional
“it depends on the level of understanding of that patient as to how you may well describe the effects really. Confused or older generation, someone in their 70s or 80s, you might describe it a bit differently for them and that level of comprehension to someone who might be a professional. You can't assume they are a professional, but you describe it, may be differently? I don't know, it's a hard one isn’t it? But then when anyone asks you a question it's how you respond anyway, you gauge your level of your response to that, to that patient and how you perceive they might understand it don't you? Yeah it's how you talk to anyone really is in it?” *Radiographer 5*	Communication
“Explaining to them, talking to them on a level, not patronising, not being condescending just explaining it to them, answering any questions realising their fears taking steps to allay those fears. If they're claustrophobic, maybe scanning them in a different way, just adapting your technique to that situation and that patient and taking a bit longer as well, you know which happens.” *Radiographer 2*	Communication Physical Technical Emotional
“Yeah because when patients come down wet you change the sheets you clean them up, even wash round their testicles. He messed himself on the table and I thought we can't slide him back because it's going to go everywhere and there was a nurse with him but yeah. I’ve never had to wash a bloke's testicles ever before, I've avoided it because it's a nursery job not a radiographer’s job, but on this occasion I felt it was appropriate because I didn't want to put him back in his bed which I had also just cleaned.” *Radiographer 8*	Physical

Data included within Data box 6.2 demonstrates that during any one single interaction or examination a radiographer must perform a role to meet the needs of the patient which goes beyond that of the producer of diagnostic images. This is explained via the construction of the concept ‘beyond the button pusher’.

6.4.1.2 Beyond the button pusher!

Data analysis revealed that the radiographer patient relationship is a multifaceted, and at times complex, relationship in which radiographers identify themselves as being required to fulfil a number of self-defined roles and personas beyond that of the creator of diagnostic images. Each of these roles are interpreted as basic level concepts encompassed within category 1 (Figure 6.10).

Figure 6.10 Beyond the button pusher! Roles identified by the radiographers as being part of their own care giving responsibilities.

Original figure drawing by (Kirstypargeter 2018) Thought words taken from participant data.

It is the engagement with these roles which enables the radiographer to meet the emotional needs of the patient during the CT scan. The complexity and nature of the radiographer patient relationship was articulated within participant data (Data box 6.3) & (Data box 6.4) and it was identified by the radiographers that whilst part of their role was to encourage and support the

patient to ensure examinations are performed as efficiently and as accurately as possible, during some radiographer patient interactions the scan room may become the patients sanctuary of reflection and release away from relatives and other medical professionals (Data box 6.3).

Data box 6.3

Supporting Data
"So sometimes you have to be firm with them, as well as, you know putting an arm around them, give them a cuddle and a tissue and you know letting them blurt out anything that they want which often they do." *Radiographer 2*

At face value the statement "you have to be firm with them", portrays a relationship whereby the radiographer is exhorting power over the patient. However, when interpreted in context of the specific examination being disclosed by radiographer 2 (Data box 6.4), together with her accounts of what she was trying to achieve, from her personal perspective for the patients benefit, it can be argued that negotiation and coercion are vital elements of care in the specific context of a CT examination which aims to produce accurate diagnostic images and the best possible outcome for the patient.

Data box 6.4

Supporting Data
"I had a patient who was postpartum. Very hormonal, very as you would be, very upset, really anxious. And we were giving contrast and I said it shouldn't hurt. But it did, just because the contrast was going through a small vein in her hand (pause) and I could have just stopped it, but I knew (pause) that it, the contrast was going into the right place. And I explained to her that 'it won't last long, it's a 30 second injection, you just have to keep calm, we've got to get these pictures,' that sort of scenario. 'Because it is for the best.' I could have stopped the contrast; the scan would have been rubbish, we may not have got the information they needed from it or it would have to be repeated and it could have affected her treatment." *Radiographer 2*

It was also revealed that radiographers often felt inadequately prepared for, or supported to deal with, the emotional needs of the patient despite this

being seen as an important element of the radiographer's care giving role (Data box 6.5).

Data box 6.5

Supporting Data
"I actually think it would be a really good thing if we had training in how to talk to them. [meaning bereaved terminally ill et cetera] Again I'm older, I've done it for a long time. I've probably developed my own way of talking to terminally ill patients. But some of the youngsters who have not got the life skills behind them, I think it would be really good for them. Just what do you say to them [the patient], because you can't just say to them you know 'everything is fine!'" *Radiographer 6* "We see so many different patients. I don't think we get [pause]. Obviously, there are training things for dementia and all of that. There are training things that you can go on. But I wouldn't have necessarily said that like a palliative care nurse would come and speak and you know say 'these are my experiences here's some tips and hints of how to deal with these sorts of patients' we don't get anything like that really. "I don't think we deal well with the emotional side of things…." *Radiographer 7*

Recommendations by The Leadership Alliance for the Care of Dying People (LACDP) (NHS Emlpoyers 2018) provide a clear vision stipulating that all staff who have contact with the terminally ill patients must have the skills to care for them compassionately and effectively (White 2017). Whilst the subject has been addressed in conjunction with therapeutic radiography education (White 2017), no such consideration has been explored in relation to the diagnostic arm of the profession. This raised questions during analysis in relation to the needs of terminally ill, bereaved and other vulnerable groups with regards to the expectations placed upon healthcare staff with regards to end of life care (EoLC) and other aspects of emotional support. A review of the literature in relation to this subject was conducted to provide depth to the analysis and to increase my own sensitivity to the data to reduce speculation and forced constructions (Chapter 8).

It was identified that feelings of being unable to provide the emotional support that radiographers felt the patients needed was one of the factors that appeared to bring down the mood of the radiographer's during the

interview. Here I found body language and tone of voice to be more significant to my own interpretations of the data than the spoken words.

6.4.1.3 When Radiographers Feel Unable to Care

When radiographers disclosed events or factors which signified feelings of being unable to provide the care they want and strive to provide, it was noted within reflexive journal entries that radiographers became observably deflated in contrast to when they were disclosing positive and rewarding events (Table 6.5).

Table 6.5 When radiographers feel unable to care.

Supporting data:	Notes:
"I also enjoy the communication with that patient in that 20-minute slot. Because you've got 20 minutes to make your mark. Whereas a nurse maybe has five days and over that period someone is going to make a judgement on the way you work and how you care for your patient and how you communicate and whether or not you've done a good job or a rubbish job." *Radiographer 7*	• Genuinely uplifted and smiling whist discussing successful interactions with the patient. • 2-way interaction benefits the radiographer's moral too.
"I think it's important to yeah. But then again, it's not sustainable is it really? *[appears down hearted]* If you've got to see 40 to 50 patients a day you can't expect to be talking to someone for 15 minutes. Obviously, I do talk to them if there's nothing waiting definitely, you know I have a good chat with them. I think that's quite important." *Radiographer 4*	• Again, communication is important to the relationship. Radiographer 4 noted as being deflated when talking of not having time to talk but later uplifted when talking about hearing stories from patients.
"If we had more time. I think we're constrained by appointment times so you've always got that in the back of your head, although you know I always try and give, well with that patient it's them that's the priority not the people waiting but sometimes that is a little bit hard and your conscious of time constraints *[deflated voice]"* *Radiographer 2*	• Conflict between time and providing care. • Constant pressure of others waiting. • Change in voice tone noted.
"I feel awful, you just feel like you've let the patient down you've hurt a patient you've injured a patient you know you flush the line you've taken that decision you thought right that's okay that's fine but then to have that happen I think it's really *[gestures in facial expression rather than words].* *Radiographer 9*	• When through no fault of the radiographer the injection fails causing extravasation. • Radiographer feels she lets herself and the patient down and feels she has not cared for the patient appropriately even though all safety procedures are followed.

When considering the radiographer's desire and ability to provide care which meets the need of the individual patient (Data box 6.6), it was observed that the patient's relationship with the CT scan and the technological environment influenced the care needs and behaviour of each patient. This influential relationship between the patient and the technology is identified as category 2.

Data box 6.6

Supporting Data
"Essentially, it's about being compassionate, empathising with people, but also delivering a service and delivering a service that is of equal quality to every single patient that you come across isn't it? That's what care is about, essentially a lot of what we do isn't it? And you know essentially producing the best diagnostic images you can and also ensuring that the right diagnostic images are performed as well, to ensure that the pathways proceed clearly." *Radiographer 8* "from a radiography perspective, it's getting them through what they need to do to achieve imaging in the nicest possible way. I mean it's not a comfortable or a nice thing to have to go through most of the time if you're feeling unwell and things. Yeah it's about, about being approachable and understanding what someone needs whilst balancing what needs to be done to get the imaging to have benefit to that person." *Radiographer 5* "well basically just making people feel at ease really isn't it? It's probably the main thing for me you know everyone's always, it's the unknown isn't it for a lot of them. They're like 'Phuuuu' you know? 'I haven't slept last night,' all that kind of stuff. And they don't know what's ahead of them so. That's quite the same in most things in life, but as soon as they've had the scan they're like 'wow that's actually really easy' *[Laughing but clearly up lifts him thinking about getting someone through a scan successfully]* You know? and it's really quick as well isn't it? Four or five minutes and so I try and tell them all that before they even get on the scanner you know?" *Radiographer 4*

6.4.2 Category 2: The Patients' Relationship with the Technology

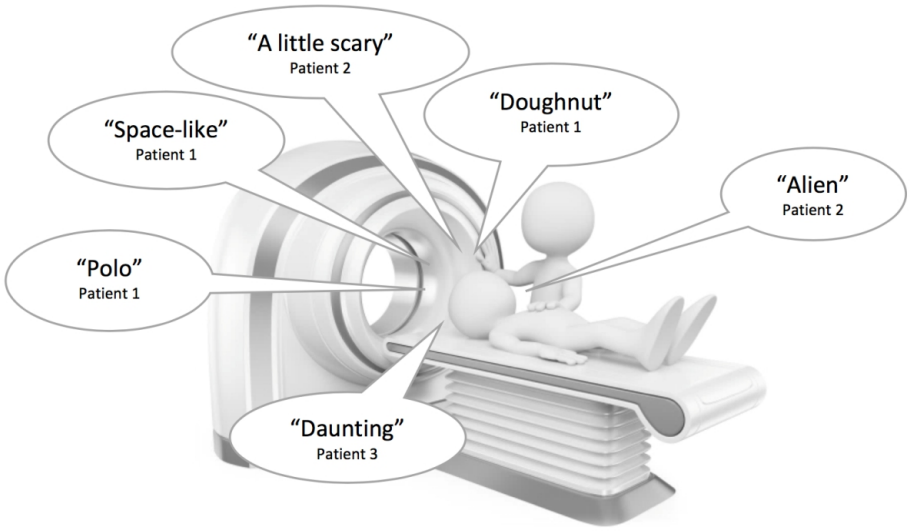
Category 2 is constructed via the integration of 4 identified concepts and their associated interrelated properties (Table 6.6).

Table 6.6 Concepts of category 2.

Concept	Properties
A double-edged sword.	• Increases anxiety. • Provides answers and reassurance. • Produces tangible images. • Uncomfortable/unpleasant. • Shows disease/spread.
Normalisation of the scan as part of overall care and treatment.	• Part of the process. • Part of the routine. • Needed to give answers.
The patient's relationship with the technology evolves over time.	• Beginning as a blessing to provide answers. • Becomes part of the process. • Trepidation in the beginning. • Necessary evil.
An emotional rollercoaster.	• Provides reassurance and relief. • But increases anxiety leading up to the scan. • Dread of the result.

Initially the patient relationship with the CT equipment is one of apprehension and trepidation. The properties identified to support this statement are depicted in Figure 6.11. It was identified within the patient data that any pre-existing fears or anxieties were alleviated through the actions and explanations of the radiographer prior to and during the scan (Data box 6.7). This suggests that apprehension and trepidation are connected more to a fear of the unknown rather than a fear of the equipment itself.

Figure 6.11 Words and phrases associated with the CT scanner as identified from the patient data.



Adapted from original image by texelart (2017) words taken from the patient population.

Data box 6.7

Supporting Data
"Very kindly words like and that puts you at ease." *Patient 3* "Well I think I did get a bit of a surprise. I think it would be good to maybe to see it before you go in there. But you know I found that the nurses, the radiographers, the people around me were so so calm and so kind and so good you know? I was sort of quickly put ease, so you know? I can't, I can't, say that I was that worried." *Patient 2*

The properties included in Figure 6.11 also demonstrate that patients de-medicalise and de-mechanise the technical equipment by using words to describe the CT scanner which make the equipment less onerous. Whilst the words "Doughnut" and "polo" were not specifically disclosed by the radiographer participants within this study, they are words used in practice by staff when introducing the machines to the patient for the first time. This is an intentional technique used to make the equipment more approachable and less threatening to the patient (Murphy 2001) and further demonstrates the ways in which radiographers address both the emotional and communication needs of the patient.

6.4.2.1 A Double Edge Sword

The patient relationship with the CT examination is conflicting (Figure 6.12). Whilst the scan itself offers reassurance and comprehensive answers, participants also disclosed that a referral for CT imaging can induce anxiety and apprehension (Table 6.7). These factors in turn can affect behaviour during the CT examination and may contribute to an unsuccessful examination if unnoticed or ignored by the radiographer.

Figure 6.12 The pros and cons of the CT scan (The patient perspective).

Adapted from an original image by Presenter media (2018) . Wording identified during concept identification and development.

Table 6.7 The patient's relationship with the technology evolves with time.

Supporting Data	Participant	Lower level concepts & properties
"To me now it doesn't matter but I would say in the early earliest days it would probably be a bit more reassuring. Because you're new, and you're ooooo [juddering]. It's early days, you know like, you don't really know what's going on and you've got that anxiety and all that. Because you've just had this operation and all like that. You don't know whether anything is gonna happen further and that. But obviously as the years go on and everything's been fine, it doesn't bother me now. Because I go and have a scan done and I know what's going on. So it's boom boom boom and then out."	Patient 3	Reassurance Unknown increases anxiety External factors increase anxiety Normalisation Efficiency = positive experience Evolving relationship with the technology Fear of the future
"I did have the last one only a couple of weeks ago. So I've had a scan more or less full body from here to here and all that, but everything was A1."	Patient 3	Reassurance Surveillance
"Well it's yearly now. I mean obviously I've been passed A1 touch wood but it's still in the background. It's still sort of you know as time goes by and that and you start coming up to the date again and you think 'oh yeah I've got to see so-and-so' or 'I've had a few aches and pains' and all that. 'Is everything all right?' and that. But no, every time I go now it's fine and I forget about it again and then it comes around again."	Patient 3	Double edged sword Part of living with cancer Reassurance Increased anxiety Cycle/ process Normalised
"I've got one growth in my lung and that hadn't grown but they just want to double-check it"	Patient 6	Surveillance Part of living with cancer Reassurance Normalised
"When they said I was going for a CT scan I thought oh obviously they're looking for something in a lot more detail than I think I got."	Patient 1	Increase severity Increased anxiety Clarification
"I think it's something that you're sort of pleased for. But you're having done because it obviously, the doctor has certain things in mind about what he thought it might be. The scan came back but there was nothing showing sort of thing. And I think it's something that you, it's like blood tests you know? You've got to have them done because it will give the doctor information he otherwise wouldn't have"	Patient 5	Reassurance Double edged sword Rule out Conduit to decision making

6.4.2.2 Patients Normalise the CT Scan as Part of Their Overall Care and Treatment.

Whilst the patient relationship with the CT examination is interpreted as being complex and conflicting, running parallel to the complexity is the normalisation of the CT scan as a part of the patient's overall care and treatment within the wider healthcare system. The CT scan is not interpreted as a stand-alone experience but instead is constructed as a significant part of the process of being unwell or living with a long-term condition. Patients within this study presented to the department with a range of health conditions and at different points in their individual healthcare and illness journey. However, it was observed that whilst each had their own personal constructions of this journey, and the experiences and interactions they had encountered, their data (Data box 6.8) included similarities to validate this concept.

Data box 6.8

Supporting Data
"I've had numerous scans as part of my ongoing treatment to just check me out that everything was okay and that's gone on from day to day to here, it was three monthly, then six monthly, and then yearly." *Patient 3* "I think I've took it as part and parcel really" *Patient 6* "Yes, but it's so important because it's still part of the total care package isn't it and if you're getting people in and looking after them and taking the tests and doing whatever then it smooths the way doesn't it for everything else. But it's part of the whole package you know you go from seeing the doctor to him ordering the test or whether you're in Hospital having the test ummm, it's all part of the total care package." *Patient 5*

As analysis progressed it became evident that the normalisation of the scan, and the constructed relationship each patient has with the examination are concepts which were influenced by experience and time (section 6.4.2.1 Table 6.7). The patient's relationship with the technology evolves over time and while the CT scan may begin as a blessing during initial diagnostic assessments, it can manifest into the 'double edged sword' as a patient's

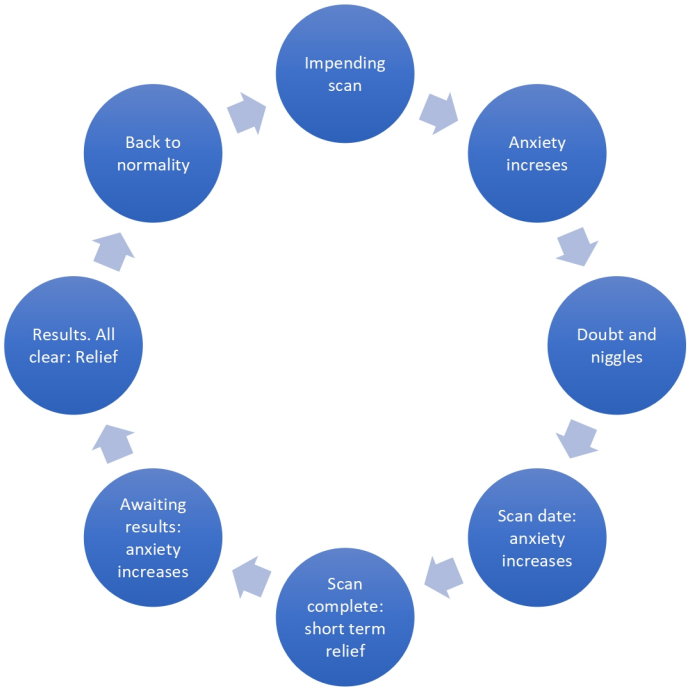
condition progresses (see section 6.4.2.1). A referral for a CT scan changed the patient's perception of their own condition. Patients disclosed data to support the interpretation that when told a CT scan was required to aid diagnosis, the scan became associated with an increase in perceived severity of the individuals own condition which in turn affected levels of anxiety and apprehension (Table 6.7 Patient 1).

When the CT scan is considered from the patient perspective, the needs of the patient go beyond the production of technically accurate diagnostic images. Exploration of the data relating to the relationship patients construct with the technology and the CT scan has identified the hypothesis that patients are subjected to a significant roller-coaster of emotions leading up to, and during, the CT examination.

6.4.2.3 An Emotional Rollercoaster

For those in this study living with cancer, concepts and their associated properties within the category: *Patients relationship with the technology,* integrate to illustrate that CT scans are experienced by this group of patients as a cyclical rollercoaster of emotions (Figure 6.13). Although recurring, follow-up CT scans are identified by patients as being a normal part of an ongoing process, the lived experience of having each scan was shown to impact upon the individual's emotional and psychological presentation and wellbeing.

Figure 6.13_Identified concepts and associated properties integrate to illustrate the emotional journey of the patient.



The CT scan, by its very nature, is a technical process. However, it was observed within the data that it is the way in which the radiographer interacts with the technology and the patient during the examination to meet the four concepts of need as identified in category 1 that becomes influential to the construction and perception of care within CT. These interpretations lead to the development of Category 3: The radiographer's relationship with the technology.

6.4.3 Category 3: The Radiographer's Relationship with the Technology

Whilst an obvious relationship exists between the radiographer and the technology to facilitate the production of high-quality images during a CT examination (meeting the technical needs of the patient), providing care within a technical environment was shown to stretch beyond the selection of the correct imaging protocol and exposure factors. Category 3 is constructed from 3 significant concepts (Table 6.8).

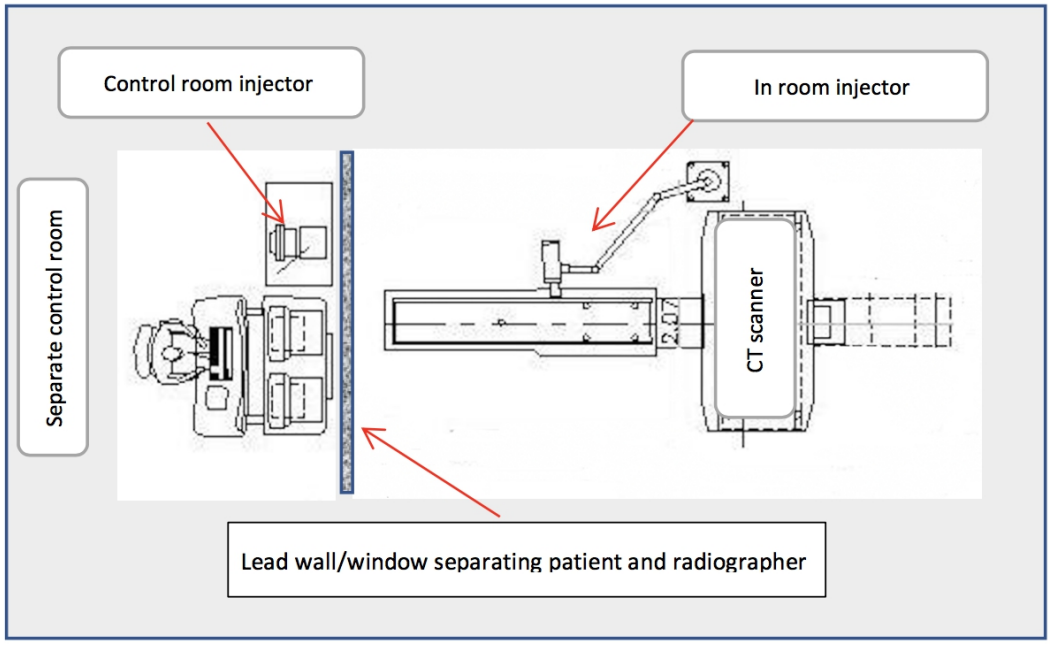
Table 6.8 Concepts of category 3.

Concept	Properties
Breaking down the barriers.	• Being with patient as much as possible. • Entering scan room between exposures. • Talking over the intercom.
Human contact.	• Talking over the intercom. • Hand holding. • Visual contact. • Knowing someone is there.
Protocols.	• Patient safety. • Getting prepared before patient enters the room by assessing the protocol and preparing the room suitably. • Restrictive. • Empowering/enabling.

6.4.3.1 Breaking Down the Barriers

As identified within the preliminary scoping review of the literature (Chapter 1) previous studies (Reeves and Decker 2012) have reported that diagnostic radiographers actively use physical technology to distance themselves from the patient, placing focus upon completing the task in hand (i.e. producing the image). Data analysed during this study would suggest that this generalisation may be more ambiguous than previously reported. During CT radiation exposure, an objective reality in the form of an obligatory physical barrier between the patient and the radiographer does exist (Figure 6.14).

Figure 6.14 Arial view of CT environment (adapted form images taken from Cadblocksfree 2018)



The radiographer can either initiate IVCM injections from inside the isolated control room or can enter the scan room to initiate the IVCM injection at the side of the patient. Entering the room is scan dependent and for some examinations is not possible due to an associated radiation exposure risk during the injection phase.

However, radiographers disclose varying active measures used to reduce the impact of the physical barrier between each radiation exposure (Data box 6.9).

Data box 6.9

Supporting Data
"When we scan a patient, I'm in the room as much with the patient as I can be until the last minute. If I can start a contrast in the rooms, I will stay with the patient making sure they're okay. And if I'm not in the room I will go back in and check. So, in the incidence of cardiacs, I do a little test bolus of 20mls and I always go back in and just check that their arm's okay. You know make sure there's no extravasation, that they are okay, especially if they've never had contrast before. If they have not experienced the hot flush and the weeing [*normal sensation associated with IVCM*] and all that, I just go back in and check. It is a little bit of a barrier, but you can make it less of a barrier depending on how, on your attitude." *Radiographer 2*

The patient perspective validates the radiographer's perception that being with the patient during IVCM injection is an important component of patient care. One patient, who had received the injection initiated from both inside

and outside of the scan room on separate occasions found that when the injection was started with a radiographer beside him, he had less to cope with. Going into the scanner and getting a hot flush from the IV contrast was presented as an “overwhelming experience” (patient 3) relieved by the radiographer’s presence. Patient 3 also recognised that in the early days of having his scans, the human contact during the scan was significant and reassuring (section 6.4.2.1 Table 6.7). Whilst his perception and comfort regarding the scan situation has changed with experience, the anxiety associated with the scan when living with cancer had not diminished. The actual physical sensation of the injection did not change, but the human contact made for a more positive experience.

6.4.3.2 Human Contact

Patient participants openly disclosed that feelings of separation and isolation experienced when undertaking a CT scan are relieved by the thought that somebody is continually watching over you. The human presence was shown to make patients feel protected and safe. Patients are reassured by a human presence even if it is in the form of a human voice over the intercom system (Data box 6.10). This concept is not unique to this study. Hearing or being able to visualise a staff member when in an SPECT-CT room is reported by Nightingale et al (2012) as being reassuring to the patient whilst reducing feelings of isolation. Carlsson and Carlsson (2013) also found that communication through the intercom system made patients in MRI feel secure during examinations.

Data box 6.10

Supporting Data
"When you can't see anybody other than the machine you feel very lonely. It's the human contact that you need at the point of going through the scans. You need to see people because I think you can go through anything, even if you're absolutely petrified, you can go through anything if you've got somebody who says this is what we are going to do and these are the good bits and these are the bad bits and if you need anything I'm here." *Patient 1* "Initially I then felt a little bit oh crikey. I'm on my own in this room. But you know she spoke to me through the intercom and you know that's obviously helpful because you know that you're being watched, and people can come in straight away if need be. So yeah that was okay. I could hear her and speak to her and whatever, yet it did get easier much easier. The senior radiographer came in and stood by my side and spoke and I think she was really very calm and very kind, yeah she really helped. *Patient 2*

Whilst on the surface the concept of human contact appears significant to the construction of care from the patient perspective, human contact is also directly associated with category 3: *The radiographer's relationship with the technology.* It is the conscious actions undertaken by the radiographers during the examination to make the CT scan a less technical and more humane experience that becomes significant to the overall construction of care within the context of CT. Patient data (Table 6.9) also supported these assumptions from a second alternative perspective. The quality of the care experience from the patient perspective was shown to be dependent on the staff involved with the scan and the personal perceptions and preferences of the individual patient. This was demonstrated clearly by the differing reactions patients had to the mobile CT unit which was in operation at the research site during participant recruitment (Table 6.9).

Whilst one patient found the unit to be relaxed and friendly, others found it cramped, awkward and unfriendly. Data included in Table 6.9 provides evidence to validate the claim that the perception of the care provided during a CT scan is truly individualised and formulated from personal constructions. These constructions are built via the patient's own interpretation of the actions and interactions of the radiographer, and the experiences to which each individual patient is exposed. It is argued that the scan room

environment has a direct affect upon the patient perceptions relating to efficiency, organisation, professionalism and personal comfort. The constructed interpretations presented by the patients were influenced by the physical layout and size of the room as well as the actions and interactions of the staff working within those environments. When patients disclosed dissatisfaction with the physical environment it was also noted that both subtle and obvious disclosures of dissatisfaction relating to radiographer's behaviour were identifiable within the data.

Table 6.9 Individual perception is subjective and dependent on the behaviour of the staff.

Supporting data	Participant	Concepts
"I find a difference between going into the hospital and going into the mobile, in the sense that the hospital ones you've got like someone doing your arm and there's a nurse with you [*more likely an RDA/radiographer as nurses do not work in the rooms at this site*] whereas like sometimes in the mobile one there's only like a nurse [*Radiographer, mobile units onsite do not have nurses*] in there. Sometimes they're all right and sometimes they're not as friendly as the ones in here, you know in the hospital. I would say in the hospital one, they've got more time for you and they're, I can't, [*loses words due to brain tumour]* nicer in a way, you know what I mean? And more patient friendly. But sometimes you feel in the mobile that they just want to get you in and get you out. Sometimes they can be a bit frosty."	Patient 6	Negative: • Less friendly • Rushed • Frosty
"And then in all the other ones I've had I mean obviously when we went outside there was a bit, it was a bit more awkward because it's cos there's not a lot of room is there? Yeah you had to shuffle about and but they still did the job and they were still you know? very kindly words like and that and put you at ease."	Patient 3	Negative: • Cramped • Awkward Positive: • Friendly staff • Kind words • Reassuring
"As I got there, there was a lady a nurse waiting for me and she said, 'we are in the mobile unit today.' And she chatted to me as we walked out, 'have you been in this before?' and I said 'no' and it seemed very easy. Although there was lots of people there waiting, it just seemed very easy and very well organised. And everybody involved with the scans was very relaxed about the whole thing."	Patient 1	Positive: • Well organised • Efficient • Relaxed • Friendly
"I had to come back for another one within the mobile unit and that was a completely, although you don't see anybody, but they are there behind you, it was a very different experience. It seems much more open again. It was two men. They were quite friendly. They just chatted to me while they were putting the cannula in and said, 'have you had one before?' and I said, 'oh I've got funny veins, I've got horizontal veins.' And one of the chaps laughed and said, 'oh there's a film about that!' Some horror film, and just, we all ended up just laughing. And it was surprising, because he was chatting, chatting to me, and laughing and I didn't even feel the cannula and suddenly, 'right are we ready to go.' And that was it and I didn't have any of the 3 feelings, but he didn't tell me those three feelings, he just said 'you'll go through the scanner and we will put the injection, the injection will start.' He didn't say, so had that have been my first one, I wouldn't have known what to have tried to sort of think about. And that seemed a much slicker easier scan for me to undertake but it might have been because it was my third one, I don't know?"	Patient 1	Positive: • Open relaxed environment • Humour • Friendly • Efficient **NB:** *less informative radiographers but overall perception of the experience was more positive than previous scans. The patient also recognises that her perception and construction of the CT is being influenced by experience.*

6.4.3.3 Protocols

As with all of the relationships identified within this study, the relationship radiographers have with protocols and protocol-controlled practice is complex and variable. One of the properties relating to this concept, running throughout the radiographer data in varying manifestations was that of ensuring patient safety. Whilst there are conscious, physical aspects of safety and practice which are heightened by experience (Data box 6.11), protocols were also identified as being significant to the preparation and maintenance of safe working and care environments (Data box 6.12).

Data box 6.11

Supporting Data
"Then obviously the safety of the patient. Make sure they get up on the table and don't fall off it. I had a patient miss a chair once and broke a hip. I just said to her 'take a seat there.' I shut the door and she missed the stool, her legs got in a muddle and crumpled beneath her and she literally went down in slow motion and did a full splat. I make sure people are safe now and where they should be and safely sitting." *Radiographer 8*

Data box 6.12

Supporting Data
"And obviously when it comes IV contrast the relevant safety questions and obviously ensuring an eGFR any suggestion of any neuropathy obviously with contrast ensuring that the IV contrast is drawn up and draw up appropriately and ensuring the correct dates and everything and same with cannulas and any dressings that you may use and ensuring that everything is safe and in date to be used on patient." *Radiographer 8*

The relationship between radiographers and protocols appears to be conflicting and dependent upon the situation with which the radiographers are faced. This reflects the work of Rycroft-Malone et al (2010) who, as previously highlighted in Chapter 2, argue that the effect of protocol driven practice is depended on the quality of that protocol and the context in which it is used. Whilst radiographer 1 viewed good quality protocols as being a means to enhancing practice, enabling safe extended roles to be formulated and validated within CT (Reid et al. 2016), others found aspects of protocol

based care restrictive and undermining. Interestingly, these individuals were, however, happy to work autonomously and outside of local working policies when they felt confident with the situation and when they believed they were working in the patient's best interest (Data box 6.13).

Data box 6.13

Supporting Data
"If a patient comes with a nurse, I will say look they have got a PE it's a big one or whatever or I'll phone the ward because I think that it's quite an important thing. People should know about that, the clinicians should know about that straightaway, rather than waiting for a report to come through." *Radiographer 2*

Radiographer 2 provides evidence of autonomous practice in the real-world setting. Whilst this participant disclosed feelings of being restricted by departmental protocols, she is confident to work outside of the standard process to ensure diagnostic information is passed on swiftly to the clinical team to benefit the patients' overall care. In the same way, this participant is also happy to take accountability for drug administration when meeting the technical needs of the patient (Data box 6.14).

Data box 6.14

Supporting Data
"I'm the one giving the drug, so I'm the one who is responsible to check everything." *Radiographer 2*

Whilst radiographer 2 takes full responsibility in relation to drug administration the same is not true for imaging protocols (Data box 6.15).

Data box 6.15

Supporting Data
"There's instances where I'm not sure the protocol is correct, and I get that checked by a radiologist." *Radiographer 2*

Here (Data box 6.15) radiographer 2 discloses that they have sufficient knowledge to know the protocol may be incorrect but will not alter the scanning protocol until the correct image acquisition details are clarified by a radiologist.

It was also noted that strict adherence to protocols may impact upon the radiographer patient relationship. For example, the act of requesting a doctor to cannulate or to review the patient after a contrast extravasation was shown to undermine the confidence the patient had in the radiographer and was perceived to induce a sense of panic and urgency into the clinical situation (Data box 6.16).

Data box 6.16

Supporting Data
"…..then they bought in a doctor and he looked at my arm very seriously. And I thought oh this is serious." *Patient 1* "And they said to me we've tried it three times were going to have to get a doctor and I was thinking what they are gonna do, where are they gonna put it, so that sort of panicked me" *Patient 6*

Data supplied by Radiographer 2 demonstrates the complex relationship radiographers have with protocol driven practice and its impact on the construction of care from both the patient and radiographer perspective. I would argue however that radiographers within this group do not call the radiologist to review patients because they are incapable of autonomous practice. Instead their behaviour is instead dictated and restricted by protocols executed within a historical culture of blame. Evidence to support these interpretations was provided by a locum radiographer with experience of working at many other NHS healthcare trusts (Data box 6.17).

Data box 6.17

Supporting data
“I find here they don't have a lot of confidence in people you know, they don't get the best out of people. They don't let people flourish. How are you supposed to get the best out of them if you're always down on them, don't give them that kind of confidence to think actually I know what I'm doing, I'm quite happy with that. But you don't get that here unfortunately. The policies have become bigger than the human side. All the policies are up here, and all the humans are below and it's very overbearing. I can't really explain it but I think they should be a bit more positive about people rather than just being like, ‘don't make these mistakes or we will come down hard on you!’ It's about being a bit supportive you know. You basically feel like it's all on you at the end of the day, when something goes wrong.” *Radiographer 4*

6.4.4 Category 4: Patients Value the Radiographers

Achieving diagnostic images as efficiently and accurately as possible is a goal shared by the patient and radiographer population. It is therefore suggested that to achieve this goal, the patient places value not only on the technical skills of the radiographer, but also on their 'soft skills' (Murphy 2006), inclusive of using appropriate communication and courteous behaviour to make the experience less clinical and more humane. Within data disclosures, which will be included within this section, the patient participants identified the radiographer as an expert in the field of CT equipment operation and image acquisition whilst being polite, informative and reassuring at a stressful and vulnerable point in the patients' healthcare journey. Table 6.10 details the concepts and associated properties which were identified to support these statements.

Table 6.10 The concepts or category 4.

Concepts	Properties
Expert.	• Technical knowledge. • Practical skills. • Image acquisition. • Further imaging.
Conduit to decision making.	• Clinician needs images. • Patients need scan for reassurance. • Patient needs the scan to provide diagnosis.
Provides diagnostic images.	• Within the patients sphere of comprehension. • Shows what the clinician cannot see. • Enables the clinician to do their job.
Communication.	• Appropriate to enable understanding and compliance. • Humour to make the situation less clinical. • Answers questions. • Reassurance.
Reassurance.	• Emotional support. • Protection.

6.4.4.1 The Expert

When discussing the care received during CT examinations, patients identified the radiographer as experts within the field and the most important healthcare professional involved with their care and treatment at that specific point in time, acknowledging that without the radiographer, the referring clinicians would be unable to fulfil their role in disclosing a diagnosis or initiating treatment plans (Data box 6.18).

Data box 6.18

Supporting Data
“Oh, my goodness absolutely yes, to me they were the most important during that time I was in there. Because, you know they’re finding out what is wrong with you aren't they? Basically, they're doing the, working the machine that looks inside you to see what's going on that the naked eye or asking questions or symptoms can’t tell. A consultant, even he doesn’t know until he sees those does he?” *Patient 2*

In the context of above statement, the referring consultant is clearly crucial to the patients’ treatment. However, the use of the word “even” indicates that the clinician, in the eyes of the patient, can do nothing without the information provided by the scan.

6.4.4.2 Conduit to Decision Making

The CT scan is viewed as a significant conduit towards the overall care and treatment that the patient will receive and therefore the radiographer becomes a significant actor within the overarching process. The radiographer, within the context of the CT scan, is positioned as the expert ahead of the referring consultant as described above. Whilst the notion of being *the* provider of information to enable the clinicians to do their job is shared by the radiographers, who value themselves and the technology as being essential to the facilitation of decisions regarding diagnosis and treatment options (Data box 6.19), the radiographer participants were visibly shocked to hear how much they were valued by the patients.

Data box 6.19

Supporting Data
“You need the technology to find out what's wrong with the patient. The technology tells you that that patients probably going to recover from cancer, and they'll be living for another 20 years. Basically it's telling them what they need to be doing up on the ward with that patient and how they are going to recover [*quite passionate when talking about this and defensive about not being viewed as caring. Very important reaction*] and what they need to be doing, what drugs the patient will need to be having and whether they need chemo you know? That's basically giving them all their answers rather than them being up there guessing for 12 hours, "oh what's going on with this patient wonder if it's this wonderful that?" You know, it's basically going to give them a definitive answer and then they can plan their treatment. Do you want to be by that person's bedside for 12 hours straight because you can't work out what's wrong with him when you can just come for a good old CT scan down here and that will tell you exactly what's going on.” *Radiographer 4*

6.4.4.3 Production of Diagnostic Images

Linking directly back to the patient’s relationship with the technology, patients valued the radiographer’s role in the production of diagnostic images. Whilst patients were shown to dislike the CT scan because it can be uncomfortable, the tangible nature of the CT images were presented as being more meaningful and reassuring to the patient than interventions such as blood tests alone (Data box 6.20).

Data box 6.20

Supporting Data
“I don't like them. Because they have trouble getting into my vein, but like having them because it gives a true effect of what I have got. I have like my cancer tablets every three weeks and they tell me what my tumour count is and what ever, but that can only just guide you, as having a full CT actually shows you. If they said to me, we're just going to go with your tumour count I'd say "no!". I saw a different consultant last time and she actually pulled up all of the CT images and shoo *[Norfolk dialect meaning shown]* me through it and whatever. That's probably the second time I've seen it. I'd seen it before when I'd been to *[names hospital]* and they’d shown me like the tumours in the brain. So, he'd like shown me those and things like that, but it was good to see it again if you know what I mean, just to remind me.” *Patient 6*

Tangible images created by the radiographer provide a meaningful representation of the disease process. This is in contrast to the ‘meaningless’ number generated by a blood test, which the patient is unable to

contextualise. If nothing is seen on the images, the scan becomes a medium of reassurance. In contrast, not having the scan would lead to uncertainty and anxiety. Evidence from the literature suggests that many patients appreciate the opportunity to review their own images with a clinician or suitably knowledgeable healthcare professional (Bleiker et al. 2018). Deitch et al (2014) and Bergelin and Lundgren (2013) support this and argue that being able to visualise one's own health through the medium of diagnostic images not only improves patient understanding, but also encourages patients to become more accountable for their own health and to take action to minimise further health risks (Devcich et al. 2013).

6.4.4.4 Communication

Communication has been identified in section 6.4.1 as one of the four elements of need. However, patients were shown to value the communication skills of the radiographers to relieve anxieties, provide information and to make the experience less clinical with the use of humour and a jolly persona (Data box 6.21).

Data box 6.21

Supporting Data
"I think whatever type of scan or whatever treatment, you have to be made to feel that you are very well informed of exactly what is going to be done to you, and that you can, you can ask any question and not thought to be silly and that they can have the time to explain to you." *Patient 1* "I mean it would be reassuring advice, that they would be looked after and told exactly what was going to happen. Which has always happened with me you know; they have always said you know exactly whether there's gonna be a noise or sensation. You have always been forewarned about that. That you would be collected and sort of taken back and you wouldn't be left wondering about anything." *Patient 3* "They were quite jolly and it was in a way, was good because it made it fairly normal. It seemed fairly normal where as if it'd have been much more ummm clinical I think and too serious then it would have made me feel more worried. So, they're sort of chat and jolly-ness if you like, took off the seriousness of the situation. *Patient 1*

6.4.4.5 Reassurance

Reassurance encompasses not only the verbal reassurance delivered via appropriate communication and reassuring actions but is also inclusive of the knowledge and skills deployed during the CT scan to operate the equipment efficiently and accurately to meet with the technical needs of the examination. Efficient radiographers appeared to instil an air of confidence within patient participants which in turn provided reassurance and was constructed by the patients as experiencing a professional, high-quality service (Data box 6.22).

Data box 6.22

Supporting Data
"Even though I still don't know what's the matter with me, I feel confident that the, that the tests were taken properly and correctly. They were you know; everything was efficiently done so I feel quite confident that they were, that was all dealt with perfectly and it wasn't an unpleasant experience." *Patient 2* You know everything is always well, I suppose engineered you know the schedule sort of thing. Efficient and good at their jobs" *Patient 5*

6.5 Chapter Summary

This chapter was used to dissect and make explicit the first stage of the analytical process followed and to provide a detailed overview of the identified categories and the concepts interpreted as being significant to the construction of each of the four categories:

1. Radiographers care about patients;
2. The patient's relationship with the technology;
3. The radiographer's relationship with the technology; and
4. The patient values the radiographer.

The next stage of data analysis, *category integration*, will follow in Chapter 7 and is identified by Corbin and Strauss (2015) as being the final and most difficult step of grounded theory construction (Corbin and Strauss 2015). Essential to category integration, were the theoretical memos and reflective

journals generated throughout the data collection and analysis as each provided a platform for reflection and questioning. As with category development, I found the benefits of arranging and rearranging the paper copies of these memos invaluable to category integration. This method provided a fluid and visual representation of the relationships between each of the categories and allowed additional concepts and ideas to be grouped together and developed around the major categories which will now be exposed and described in Chapter 7.

Chapter 7: **Building the Theory Part II – Integration**

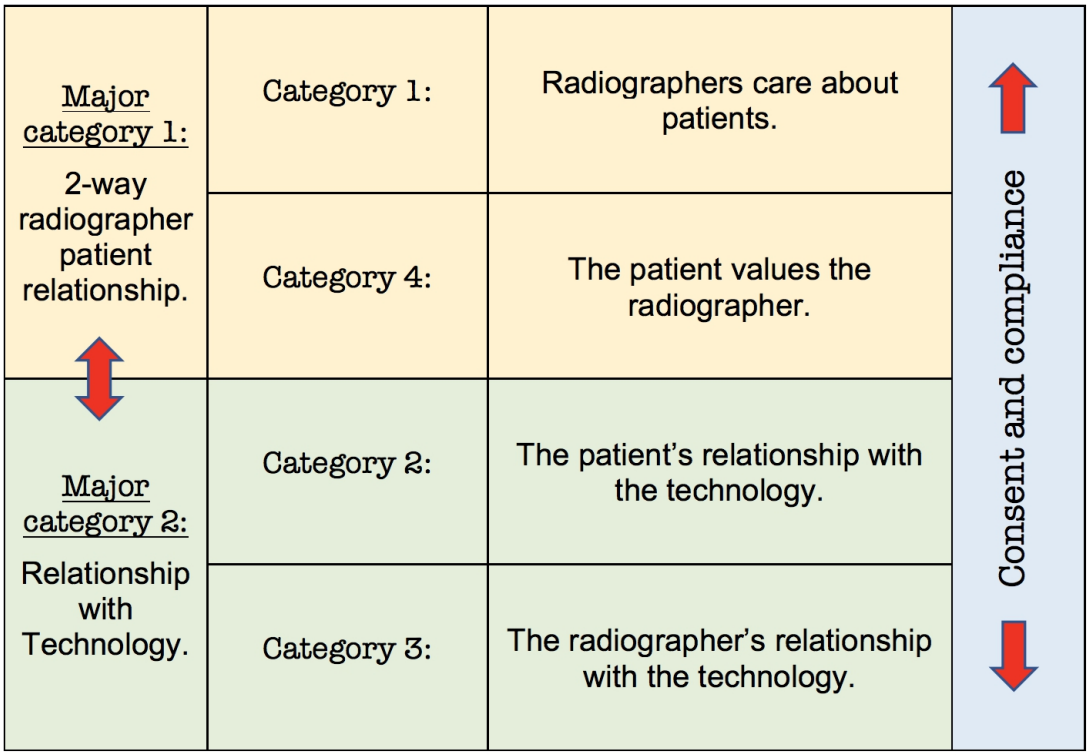
Following the identification of the four categories: Radiographers care about patients; The patient's relationship with the technology; The radiographer's relationship with the technology and; The patient values the radiographer; the next stage towards grounded theory generation required further questioning of the data and category integration.

7.1 Introduction and Overview

Category integration evolved as a natural consequence of continued theoretical questioning during data analysis. To build meaningful explanatory theory it became necessary to ask the questions how and why? I began to ask and consider what was happening during the CT examination, why, and how the actions and behaviours of the radiographer and patient could be used to explain and define a model of care specific to the context of the high technology environment of CT. Integration at this stage also included the writing and re-writing of the preceding analysis (Chapter 6) to consolidate thoughts and to produce a formal coherent presentation of the study findings.

During this phase of analysis, I identified that the relationships between the radiographer, patient and the technology remained pivotal to the construction of care in CT from both the patient and radiographer perspectives. Both relationships were naturally exposed during initial concept development and integration, as shown in Figures 6.6,.6.7 & 6.8 (Chapter 6). However, as the analysis evolved, these relationships remained consistently significant to the developing explanations and were therefore identified as the 2 Major categories: 2-way radiographer patient relationship and; relationship with technology. These cohesively joined the previously defined categories 1 and 4 (see Chapter 6) and categories 2 and 3 together (Figure 7.1).

Figure 7.1 Category integration.



Throughout the analysis it was identified that, due to their intrinsic connection to the entire construction of care within CT, the individual concepts of compliance and consent could not be identified as, or within, a stand-alone category. Consent and compliance were presented with differing properties and in varying manifestations throughout the disclosed participant data and therefore, whilst present within Figure 7.1 as a separate element, they are considered as concepts which are fully integrated within the core and major categories.

During category integration, existing literature was also used to elaborate and validate the developing interpretations and constructions emerging from the participant data. Whilst the influences of the literature are identified and made explicit via formal referencing within this chapter, a full supplementary literature review is presented in Chapter 8. This chapter will now describe each constructed major category using a combination of primary data and external literature to validate the presented interpretations and their relevance to practice.

7.2 Major Category 1: 2-way Radiographer Patient Relationship

If we first reflect back upon the categories which construct major category 1 (radiographers care about patients and patients value the radiographer), it is evident that care within CT is reliant on human interactions which are used to achieve the goal of producing diagnostic images. The patients were shown not only to value the technical skills of the radiographer but also the more personal skills that offered support and reassurance during the examination.

It has been identified by the Society and College of Radiographers (SCoR) that a *'successful, skilled CT radiographer will earn the confidence of the patient in order to establish their consent and compliance'* (The Society and College of Radiographers 2017: 5). Within the context of this study it is suggested that this can only be achieved via the construction of a mutually respectful relationship between the radiographer and the patient. This is a relationship that is built via the use of appropriate communication and the actions deployed by the radiographer during the examination to address the needs of the individual patient. This can be interpreted as behavior that provides evidence that radiographers within CT are providing patient centred models of care within a relatively short period of time.

The preliminary review of legislative documentation relating to radiography practice and care (Chapter 3) highlighted that the time required to build a respectful relationship with each patient was a luxury not afforded to modern radiography departments (Mathers et al. 2013). Evidence from Munn et al. (2014) supports this notion by reporting on the conscious decisions made by radiographers to reduce the time dedicated to each individual patient, preferring instead to focus on the maintenance of fast and efficient services (Munn et al. 2014). However data disclosed by radiographer participants (Data box 7.1) contests these assumptions and instead identifies that CT radiographers relish the challenge of building a successful relationship and having a positive impact on the patient's life within their relatively short, solitary interaction. This skill is therefore not only interpreted as essential to

the provision of care within CT but is also constructed as an enjoyable and rewarding element of the CT radiographer role (Data box 7.1).

Data box 7.1

Supporting Data
"I also enjoy the communication with that patient in that 20-minute slot. **Because you got 20 minutes to make your mark.** Whereas a nurse maybe has five days and over that period someone is going to, make a judgement on the way you work and how you care for your patient and how you communicate and whether or not you've done a good job or a rubbish job." *Radiographer 7*
"It's really hard because you can first, obviously you can make those decisions in the first few seconds and you decide actually I'm not really gelling with this patient and actually once you get talking to them you put them at ease, and they sort of, calm down and actually it all turns out all right and they're fine and their ease and you sort of **build-up that relationship even if it is you know that 20 minutes in the room.** You know and then you can judge, like some people you can judge that you can have a bit of a laugh and a joke with, and some people you can't. You can just tell from the body language and they're just the way they are and again that comes with experience." *Radiographer 2*
"That is the best bit about of my job generally unless you know you get the odd obnoxious patient *[laughing]* but generally *[smiling and generally uplifted]* it is I just like the chatting with people putting them at ease. I think it, I know it sounds awful, but it depends on how tired you are. Sometimes it is a little bit like, oh there's another chest abdomen and pelvis but then you get the patient in you have a chat and actually that changes" *Radiographer 2*
"I like my little 20 minutes with my patient. And that's a nice sort of kick in the, kick in the backside as to why you are in this job." *Radiographer 3*
"And you find like sometimes you get, some patients like our sheep man, *[a patient we had scanned together a few months prior to the interview. This has stayed as a good memory and interaction]* and you get into conversations with people, random conversations because that was quite random was in it? And actually, you empathise with them more and actually you get a lot out of it. And actually, the patient gets more out of it as they are essentially distracted about what's going on and they have a wholesome great experience on our scanner because it's not just about what's going on about them at that point in time, it's about other things going on in the background and just generally being human and personable really isn't it?" *Radiographer 8*

Data supplied by Radiographer 8 (Data box 7.1) indicates that 2-way respectful relationships brought about by good communication and interactions between the radiographer and the patient are not only beneficial to the patient experience, but also the radiographer's ability to empathise with the patients situation. In the words of radiographer 7 *"people need*

people", a concept that is not exclusive to the needs of the patient. As a recent report from NHS England supports the hypothesis that patient satisfaction and staff experiences are inextricably linked (Dawson 2018), the benefits of a 2 way respectful relationship are considered as significant to the overall construction of care within CT. When 2-way respect is lost, the impact on the care provided by radiographers was exposed (Data box 7.2).

Data box 7.2

Supporting Data
"You know what? seriously over my time in there *[CT]*18 months or so, I think probably I can count on one hand or less, that I can recall, the patients that have really got my goat. Whereas actually it would be conversely when I was in plain film. It would be the other way around. People would just be whingeing that they're waiting, whingeing this, whingeing that, but I don't know? CT patients have just got a different attitude, so my attitude is a bit different to them. And because the level of I suppose, you have to be a bit more involved with regards to, going back slightly to consent, to get informed consent and an understanding of what you are doing and why you're doing it a bit more, the radiation dose that you giving to them? So actually, you become a bit more involved in a conversation. Whereas actually when you're in plain film x-raying a quick chest, in out what's your name? get on there, keep still, out, done. Whereas you get more involved when you are scanning someone, so then I suppose in essence the care that the patient receives, that you are giving, is more involved. It takes you longer, it's a mutual two-way thing isn't it?" *Radiographer 8* "Sometimes I don't know if their expectations are unrealistic in the sense that sometimes I feel that it's not a healthy interaction. You know you've gone to the doctor you got a problem and you're wanting to find out okay fair enough, but sometimes I think they approach it in the way of they're paying for a service in a way. You know as if they've come for a meal or something. You know it's like "oh this table isn't right". Sometimes I think their expectations, I would say are misplaced. They ask, "how long will my results take?" and all of that. And you tell them, and they're shocked and complain or get shirty and you just feel like saying "you know there's a hundred people who access the hospital every day who have scans!" So, I do try to explain to them, you know? Not rudely or anything like that. But I say, "we do MRI, ultrasound, CT and all of the scans need to be reported on and it doesn't take five minutes, it takes quite a long time you know?" *Radiographer 10*

What must be noted is that evidence provided by radiographer 8 (Data box 7.2) explicitly acknowledges that care is specific to the type of radiological examination being undertaken as well as the patients presenting condition and attitude. This makes the translation of published models of care from other healthcare settings or diagnostic modalities to the clinical environment of CT challenging.

It was identified from the radiographer data that during incidents where the patient appears not to respect the radiographer, it is the recognition of external factors, hidden stressors and anxieties that may be affecting the patient's behaviour that help the radiographer to identify influencing factors and additional needs to ensure examinations remain on track. Radiographers are acutely aware that patient behaviour can be influenced by, and attributed, to external stresses and factors which may be outside of their control. The data also supports the concept that CT radiographers are able to empathise with patients on an individual basis and adjust their behaviour accordingly (Data box 7.3).

Data box 7.3

Supporting Data
"I think sometimes I did struggle with patients, earlier on I did sort of sometimes struggle with people who were quite abrasive and quite aggressive, probably not aggressive, but you felt like you were asking them questions and then thinking why are you being like this you've come here for this test, and then it sort of dawned on me one day and this was after like a number of patients, that as soon as it was all over they were absolutely wonderful and you think oh it's because they're scared. So now I try not to sort of take offence or you may think they're a jerk or whatever you know, I think "I think this person just needs a little bit more explaining to or try and get from them what it is that they're worried about" or is there something else I can tell you to help you and sometimes that works and sometimes it doesn't but you know they're all different" *Radiographer 10* "These patients are often, can be quite rude, but it's not because they're a rude person, it's because they're scared anxious da da da. So, you have to rise above what you might naturally feel. Like 'well don't talk to me like that!' But you can't say that to someone who is scared and worried, and you need to sort of rise above your natural instincts to be defensive if you are of that persuasion." *Radiographer 2* "Other people don't perhaps like a jokey atmosphere. They're perhaps thinking you know, I'm fed up with this, I just want to get it done get it over with, not being an arse, just anxious." *Radiographer 9*

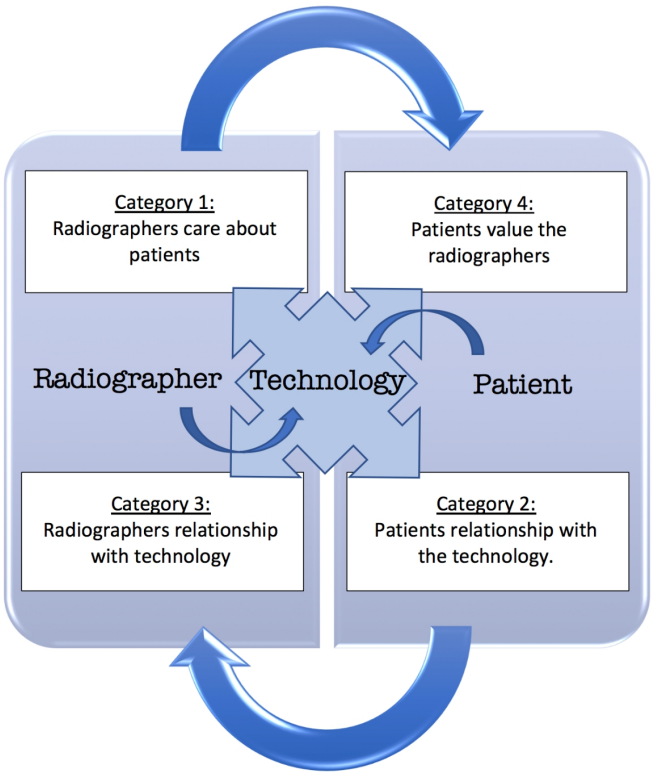
The disclosure of empathic behaviour and the level of understanding identified by the radiographers opened up a line of theoretical elaboration which needed to be evaluated by bringing literature into the analysis (Corbin and Strauss 2015). The data presented by the participants raised questions relating to emotional intelligence and its significance and relevance to care

construction within CT. Therefore, the literature reviewed as part of this line of questioning is included in chapter 8.

7.3 Major Category 2: Relationship with Technology

This major category predominantly refers to the relationship the radiographers have with the technology, the technological environment in which they work, and how the radiographers interact with the technology and patient simultaneously to provide care whilst achieving a diagnostic examination. The radiographer's relationship with technology goes beyond having the knowledge of how to operate the equipment to create diagnostic images. The radiographer must call upon 'a library of knowledge' (Radiographer 5) appropriate to each patient's needs to achieve a technically excellent examination whilst providing individualised care which meets the changing needs of the patient as described in section 6.4.1. Achieving this is dependent upon appropriate interactions between the radiographer, the patient and simultaneously the technology in its various forms as identified within the concepts and categories described within chapter 6 (Figure 7.2).

Figure 7.2 The model of care constructed during the CT examination.



Whilst the major category focuses around how the radiographer reacts and interacts with the technical environment and the patient, the major category also encompasses the patient's relationship with the technology and how this can affect and influence behaviours that must be recognised by the radiographers if they are to successfully provide adequate care to each patient.

An example of the way in which the patient's relationship with the technology can affect behaviour, and therefore influence the way in which the radiographer must react with the patient and the technology simultaneously to meet patient needs, was identified in relation to the patient's external presentation during the scan. On the surface, patients interviewed during this study presented themselves as being comfortable with the imaging process, declaring that to have a CT examination is an experience that 'doesn't really bother' them (Patient 1). However, when accounts from the patient are explored in more depth, there are clear indicators that even the most stoic of patients could be more anxious and potentially vulnerable during the CT scan than may be initially perceived by, or openly disclosed to, the radiographers. This concept has been evidenced by patients via the disclosure of coping mechanisms and behaviours which become exposed during a CT scan (Table 7.1). This phenomenon was identified as one requiring further exploration using published studies evaluating patient experience within diagnostic imaging. Making the assumption that all patients are anxious during a CT scan substantiated by the limited experiences of the research participants alone, would ignore the basic premise of the GT method (i.e. ensuring developing theory is grounded within data) and therefore warranted further evaluation before substantiated claims could be made. The data to support the claims made relating to hidden anxieties are presented in Chapter 8.

Table 7.1 Patient contradictions indicating anxiety.

How does it feel to have a CT scan?	Data to support a contradiction.	Participant.	Memo.
"I don't tend to get very worried about things. If I'm going through some form of treatment, I just think I've got to go through this, and I just do it."	"I think I would have felt better if somebody had, yeah if somebody had said we can put the injection in now and then I'll be leaving the room and you're just going to be going through the scanner and it's just going to be no more than five minutes" "I think it might have made a difference even if the booth or bit that you go into was the other side of scanner. So as you came through the scanner you could see your *[radiographers]* face. So when somebody says we are starting the injection now, that person could be seen through the screen. Because you still feel if somebody is behind a glass screen you still feel as if they're in the room with you but when you can't see anybody other than the machine you feel very lonely." "But I just think if I thought if I could see someone, somebody of some description, then I think that would make people feel more at ease so that they're not on their own in that room with that **machine** *[emphasis placed on that machine]"* "It didn't bother me because I knew that they were behind, in there behind the screen in their room. I think for some people it would be nice if there was somebody in the room, even if it was possible to have someone standing behind the scanner, so when you're lying there and going through you tend to look through the polo hole and look at things and if somebody was there then you could either ask something if you wanted to or if they just stood there and said are you okay? You know I think that would be quite reassuring from the patient's point of view because like I said, I don't tend to get very worried about things, I just think I've got to go through this and I just do it *(means to an end)* but I think if I was a different type of person or if I was older and a bit more nervous. Or younger, just to have a reassuring face behind the saying everything is fine, only a few minutes and you'll be out, that might make all the difference to how those people feel because you do feel a bit sort of lonely."	Patient 1 (female)	Saying "I would have felt better" indicates some level of discomfort with the situation Although P1 talks of others feeling more at ease. This is a point she repeated, indicating it was actually significant to her own experience. See did a lot of reflecting around how other would feel but feelings of isolation and loneliness are felt by her too.

Table 7.1 (continued) Patient contradictions indicating anxiety

How does it feel to have a CT scan?	Data to support a contradiction.	Participant.	Memo.
"So um that's what I fear *[referring to her back problem taking over her life*] more not the scan itself" "that was you know, that was nothing"	"well I was already I think a little bit on edge because unfortunately we had to wait. I had to put my gowns on you know, the dressing gown thing on and sit in the public waiting room" "my secret was to lie there close your eyes and think of somewhere nice to be and just let you know do whatever."	Patient 2 (female)	This patient also stated "I'm not a person to even like a fuss so I was embarrassed to have to ask for help" when talking about collapsing in the supermarket with a suspected MI. Patients who do not speak up may get overlooked.
"Personally, it didn't affect me because I was so concentrating on what's, you know you have your eyes shut like that *[shuts eyes tight shut]*, and you're just thinking of exactly what's happening. You not aware of, because you know you shut your eyes you're not aware of like, you just know that things, like where you go in and out and somebody speaking over the *[hand gesture]* and that. Yeah, I just deal with it.	"Personally, it didn't affect me because I was so concentrating on what's, you know you have your eyes shut like that [*shuts eyes tight shut*], and you're just thinking of exactly what's happening. You not aware of, because you know you shut your eyes you're not aware of like, you just know that things, like where you go in and out and somebody speaking over the [*hand gesture*] and that. Yeah, I just deal with it.	Patient 3 (male)	Patient 3 contradicts that the scans do not affect him within the same statement. To need a coping strategy, would as with patient 1, indicate some level of discomfort with the situation. The facial expressions pulled to demonstrate what he does during the scan were not indicative of a person who was entirely at ease during the procedure, despite stating he had experienced many scans and knew exactly what was going to happen.

7.4 Chapter Summary

The analytical process detailed within this document has fully utilised a constant comparative method to guide theoretical sampling and this in turn has facilitated the construction of the major categories and the emergence of the core category (see Chapter 9) which aims to explain how and why care is constructed within CT in the way that it is. Data analysis took the approach outlined within Chapters 6 & 7. However, whilst each stage described has been summarised as separate steps forming part of the theory construction process, the processes of analysis used in this adapted version of GT moved continually backwards and forwards through each stage as new concepts were identified, developed and integrated into categories.

Throughout the analytical process, areas of interest were highlighted as needing further exploration and validation from existing literature and other relevant published studies. A comprehensive literature review, encompassing the knowledge and data which has been brought into the analysis and grounded theory construction, is presented in the following chapter. This will be proceeded by chapter 9 which will expose the resultant grounded theory construction as an amalgamation of the primary data analysis and the influences of the focused literature review.

Chapter 8: **Comprehensive Literature Review**

Throughout the research development, data analysis, and subsequent grounded theory development, lines of questioning emerged that required further exploration and validation against existing literature. Whilst a traditional PhD thesis will include a full literature review at the beginning of the presented research, following an adaptive form of GT means that literature is incorporated into every step of the research process as part of a full comparative methodology to bring additional knowledge and data into the study throughout its development and execution. This chapter has been purposefully placed at this point in the thesis as it is a combination of the knowledge gained during the theory building as presented in Chapters 6 & 7, together with the knowledge gained from this comprehensive literature review which, when combined, have generated the grounded theory presented in Chapter 9

8.1 Background to the Review

This chapter presents a purposefully focused comprehensive literature review guided by the evolving analysis detailed in the preceding chapters and the emergent lines of theoretical questioning identified during analysis. Subjects included within this review range form care as a theoretical concept to practical issues relating to consent and the role of the diagnostic radiographer. The aim of this review is to provide an overview of the additional literary data which has influenced the interpretations and constructions presented in Chapters 6 & 7 and the resultant grounded theory that will be presented in Chapter 9.

Whilst there are many themes and additional subjects that could be explored in relation to care delivery and experience, the subject headings presented in this chapter were chosen as the significant themes that had emerged and were explored during data analysis and theory construction. These were themes that I had purposefully perused and investigated as part of the fluid adapted GT methodology followed. Whilst some of the themes such as ‘Care’ had been revisited and researched at different points during the research

journey, others such as ‘End of life care’ only became apparent as additional literature was read and compared against the primary data supplied by the research participants. As the constant comparative method is fluid and not linear, it was important for me to make explicit and present the literature which had been used to support my own GT constructions so that the evidence was not lost in unpublished memos and my own thoughts. As the subjects and themes bridge across the data analysis and support the constructed grounded theory, the subject headings and themes have been chosen and presented to make explicit the knowledge, evidence and additional data sources that I have used to build the concepts, categories and major categories presented within this thesis.

8.1.2 Overview of the Search Strategies Used

Database searches utilising CINAHL, MEDLINE and EMBASE (Table 8.1) were conducted and rerun at regular intervals and when specific lines of theoretical questioning arose during the research journey.

Table 8.1 Databases and justifications for their inclusion.

Data Base	Justification for Selection
Medline	Combined by the National Library of Medicine (NLM) in the United States, MEDLINE is the premier bibliographic database covering the field of medicine, nursing, the healthcare system and the preclinical sciences. It contains citations from over 4,600 journals. Full text for over 2100 journals. Coverage is worldwide, but most records are from English language sources or have English abstracts. Standard Medline is available from 1966 – present day. (Greenhalgh 2006; EBSCO 2018; University of Bradford 2018)
CINAHL (Cumulative Index of Nursing & Allied Health)	CINAHL is the world's most comprehensive nursing and allied health research database, providing full text for more than 1,300 journals and indexing for more than 5,500 journals from the fields of nursing and allied health. CINAHL covers nursing, complementary medicine, consumer health, midwifery, physiotherapy, occupational therapy and other allied health disciplines. (Greenhalgh 2006; EBSCO 2018; University of Bradford 2018)
EMBASE	Covers the entire field of medicine and has particular emphasis on European sources. EMBASE is an international biomedical and pharmacological database containing over 28 million records from around 8,500 journals. It covers the most important international biomedical literature from 1947 to the present day.(Greenhalgh 2006; University of Bradford 2018)

The search strategies were guided by a PFOS (Population, Focus, Outcome and Study Design) framework (Table 8.2), which provides an overview of the search terms used. It must, however, be made explicit that this was an evolving and dynamic table which developed as each of the searches and emergent lines of questioning were developed and explored. The Boolean connector OR was used between identified synonyms, and AND between the differing population, focus and outcome terms and concepts. An example being (*patient OR *clients OR *“service users”) AND (*Care OR *“Patient care” OR “Patient satisfaction” OR “Patient experience” OR “Experience of Care”).

Table 8.2 PFOS table used to guide the literature review.

	Search Terms
Population	(*patient OR *clients OR *“service users”) (*radiographer(s) OR *Technologists OR *“Radiation Therapist” OR *“Nurse Radiographer” OR *“Radiologic technologist” OR * “Medical radiation technologist”)
Focus	(*Radiology OR *“Diagnostic Imaging” *CT OR *“computed tomography” OR *“Multi slice CT” OR *“Helical CT” OR *“Multidetector CT” OR *MRI OR * “magnetic resonance imaging” OR *“SPECT-CT” OR *“Nuclear Medicine” OR *“Breast Imaging” OR *“Interventional Radiology” OR *IRU OR *“Radiotherapy” OR *“ Ultrasound” OR * US) (*“End of life care”) (*“Emotional Intelligence”) (*Consent”) (*“Palliative care”).
Outcome	(*Care OR *“Patient care” OR “Patient satisfaction” OR “Patient experience” OR “Experience of Care”) (*“Patient safety”). (*“Patient centered care” OR *“Patient focused care”) (*“Evidence based practice OR *“Evidence based radiology”). (*“Protocol based care”). (*“delivery of healthcare” OR *“patient care management”/ OR *“healthcare, quality, access, and evaluation”) (*“healthcare delivery” OR *“quality of healthcare”)
Study Design	Any

A focused search (Table 8.3) was used to identify articles relating to care within diagnostic imaging.

Table 8.3 Focused search strategy.

#	Database	Search Term	Results
1	Medline	exp*“DIAGNOSTIC IMAGING”/	789179
2	Medline	*“PATIENT CARE”/	5148
3	Medline	*“DELIVERY OF HEALTHCARE”/ OR *“PATIENT CARE MANAGEMENT”/ OR *“HEALTHCARE, QUALITY, ACCESS, AND EVALUATION”/	53181
4	Medline	(patient ADJ1 perception*).ti,ad	5355
5	Medline	(patient ADJ1 experience*).ti,ad	18917
6	Medline	(2 OR 3 OR 4 OR 5)	81934
7	Medline	(1 AND 6) [DT 2000-2018][Human age groups Adult][Languages English]	**190**
8	EMBASE	exp*“DIAGNOSTIC IMAGING”/	32355
9	EMBASE	*“PATIENT CARE”/	60469
10	EMBASE	*“DELIVERY OF HEALTHCARE”/ OR *“PATIENT CARE MANAGEMENT”/ OR *“HEALTHCARE, QUALITY, ACCESS, AND EVALUATION”/	169615
11	EMBASE	(patient ADJ1 perception*).ti,ad	4848
12	EMBASE	(patient ADJ1 experience*).ti,ad	22356
13	EMBASE	(9 OR 10 OR 11 OR 12)	196927
14	EMBASE	(8 AND 13) [DT 2000-2018][Human age groups Adult 18 to 64 years][Languages eng]	**15**
15	CINAHL	exp*“DIAGNOSTIC IMAGING”/	142901
16	CINAHL	*“PATIENT CARE”/	11885
17	CINAHL	*“HEALTHCARE DELIVERY”/ OR *“QUALITY OF HEALTHCARE”/	54289
18	CINAHL	(patient ADJ1 perception*).ti,ad	5366
19	CINAHL	(patient ADJ1 experience*).ti,ad	23216
20	CINAHL	(16 OR 17 OR 18 OR 19)	92542
21	CINAHL	(15 AND 20) [DT 2000-2018][Human age groups Adult : 19-44][Languages eng]	**224**
		Total papers identified:	**429**
		After duplicate removal:	**384**

As this strategy (Table 8.3) initially provided limited relevant results, the search was expanded further to include therapeutic and interventional radiology and further expanded again to include nursing and other comparable health professional literature as a means of exposing a wider knowledge base. Citation searching also proved invaluable to the review, exposing articles and texts that had not been highlighted during the database searches.

It is acknowledged by the Centre for Reviews and Dissemination (CRD) that the tools and methods used for the identification of qualitative studies from electronic databases are less developed than those available to identify quantitative research (Centre for Reviews and Dissemination 2009). Searches are hindered by the descriptive and creative titles that are frequently assigned to research of this nature and indexing differences within the databases makes retrieval of qualitative studies challenging (Centre for Reviews and Dissemination 2009). For these reasons, a decision was made to conduct a hand search of *Radiography* the official peer-reviewed journal of the Society and College of Radiographers and the European Federation of Radiographer Societies, and *European Radiology* to ensure that relevant articles were not overlooked.

Textbooks also provided significant data and knowledge surrounding the subject of care. Significant texts were identified using subject searches of healthcare library catalogues both locally and nationally. To ensure that the constant comparative method continued throughout the study, each of the government and professional databases used for document identification in Chapter 3 were also revisited at regular intervals to ensure that updated and new legislation could be identified, reviewed and, where relevant, included within the following review and subsequent grounded theory development.

8.2 Care

Care is a subject which has been conceptualized by many different groups and ideologies over the last 50 years (Phillips 2007: 27). From feminist interpretations in the 1960's through to the more recent emergence of theories surrounding 'political ethics of care' encompassing citizenship and social justice (Phillips 2007: 30; Tronto 2015). Whilst the subject and related theories surrounding care are vast and thought provoking, this section of the review will remain focused upon theories of care and care provision relevant to the healthcare setting. This has been considered purposefully to ensure the data collected remained sensitive to the research question: How is care constructed within the high technology diagnostic imaging environment of CT?

and could be used to enhance the validity of the arguments and interpretations made during analysis of participant data.

Care has many forms and as Held (2006:29) argues, so should our understanding of it. Phillips (2007:1) considers care as a nebulous and ambiguous concept, often taken for granted and constructed as a normal part of everyday life, a concept fundamental to individual identity and influential in all social interactions (Phillips 2007: 1). When analysing care as an ongoing process Fisher and Tronto (1990) identify four interconnected phases of care: *caring about, taking care of, care giving, and care receiving* (Table 8.4) (Fisher and Tronto 1990: 41-45).

Table 8.4 Four phases of care(Fisher and Tronto 1990; Tronto 1993; Tronto 2015).

Phase	Salient elements
Caring about	• Involves the recognition that care is necessary. • Involves noting the existence of need and making the assessment that this need should be met. • Is culturally and individually shaped.
Taking care of	• Involves assuming some responsibility for the identified need and determining how to respond to it. • Involves the recognition that one can act to address the unmet needs. • Involves notions of agency and responsibility in the caring process.
Care giving	• Involves the direct meeting of needs. • Involves physical work and almost always requires that the caregiver comes into contact with objects of care.
Care receiving	• Recognises that the object of care will respond to the care it receives. • Provides the only way to know that care needs have been met.

Already we can see that many of the salient points disclosed above are identified within Chapters 6 & 7 as being relevant to the construction of care within CT. Therefore, the presumption that radiographers are uncaring/unable to provide care due to the technical environment in which they work is a misnomer. Tronto (2015) challenges the assumption that

individuals are natural carers and intuitively good at providing care and instead describes care as a learnt skill which develops with time and experience (Tronto 2015: 7). When this is reflected upon in terms of wider healthcare provision, the anecdotal perception that nurses provide care as part of their naturally intuitive disposition becomes contested (Tronto 2015: 30). The skills necessary to provide care within a specific care environment are learnt and constructed through the constant exposure to varying clinical situations and patient needs during daily practice (Tronto 2015: 7 & 30). Tronto strengthens this interpretation by explicitly referring to the advantages of working within the confines of a specific environment claiming that by doing so, carers become more attentive to specific care needs in relation to the context of the situation in which the care is being provided (Tronto 2015: 7).

Care, when discussed in terms of 'ethics of care' (Tronto 1993; Held 2006; Tronto 2013; Tronto 2015) places the phenomenon of care at the centre of ethical reflection with the purpose of generating theories relating to caring and being cared for (Ethicsofcare.org 2018). Held (2006:30) highlights that many authors writing on the subject (Noddings 1986; Fisher and Tronto 1990; Tronto 1993; Bubeck 1995; Held 2006; Tronto 2013; Tronto 2015) agree that care which is relevant to an ethic of care must, at the very least apply to an activity rather than a mere feeling. In essence, care is regarded as work involving some form of expenditure of energy (Held 2006: 30). Tronto (1993:108) also regards care as a practice rather than a mere principle or emotion and in keeping with the position of my own study, when considering care as a practice there is an implied involvement of both thought and action which must be interrelated to achieve an end goal (Tronto 1993: 108). Importantly Held (2006: P30) makes the distinction that engaging in the work of taking care of someone is not the same as caring for them in the sense of having care feelings for them. However, whether care feelings must accompany the labour of care remains a subject of debate.

Significant to the ethic of care as presented by Held (2006) is the characteristic of attending to, and meeting the needs of, those for whom a

person has responsibility (Held 2006: 10). In the case of the CT radiographer, this would be the patient. Tronto (1993:108) however cautions against the presumption that a care need has been met just because it has been identified and acted upon as perceptions of needs can be misinterpreted. Tronto highlights that during care interactions, even when a care need has been correctly identified, the way in which the care giver chooses to act to meet the presumed need may be inappropriate to the individual who is receiving the care (Tronto 1993: 108). Consequently, care actions and behaviours have the potential to negatively affect the perceived success of the care giving process from the patients perspective (Tronto 1993: 108).

In 1990 Joan Tronto together with Bernice Fisher proposed a definition of care which encompassed as Tronto (1993;103) explains, virtually all that we do in life (Data box 8.1).

Data box 8.1

Supporting Data
'On the most general level, we suggest that caring be viewed as a species activity that includes everything that we do to maintain, continue, and repair our *'world'* so that we can live in it as well as possible. That world includes our bodies, ourselves, and our environment, all of which we seek to interweave in a complex, life-sustaining web.' *(Tronto 1993: 103)*

Within this definition, care is not restricted to human interactions with others (Tronto 1993: 103). Included is the suggestion that it is also possible to care for objects and environments (Tronto 1993: 103). This becomes significant in the high technology imaging environment, where ensuring effective equipment performance within defined safety limits requires routine maintenance and quality monitoring processes to be regularly performed. Considering these equipment maintenance acts under Tronto and Fishers definition (Tronto 1993: 103) suggests that the equipment is being cared for alongside the patient for the benefit of the patient. Of further value to this study is the notion that Tronto and Fisher's definition of care does not presume caring to be dyadic or individualised; *'We insist that caring is largely*

defined culturally and will vary among different cultures' (Tronto 1993: 103). One of the limitations of my own study is that the study population is not culturally diverse and therefore elements of cultural difference cannot be addressed. However, Tronto and Fisher's (1993:103) interpretation of care supports the theory that institutional and cultural variants within differing care environments will result in a unique construction of care within CT and diagnostic imaging when compared to the traditional constructions and expectations of care associated with hospital wards, medical consultation rooms and care homes.

Held (2006:31) regards Tronto and Fishers (Tronto 1993: 103) definition of care as being too broad, arguing that it devalues the requirement for the carer to remain sensitive to the specific care needs of the individuals who are being cared for. Held instead views care in terms of 'caring relations' (Held 2006: 36) which places focus upon the relationship which exists between the care giver and care receiver, rather than just the actions or labour associate with providing care (Tronto 2015: 12). Held (2006) embraces and reflects upon the work of Noddings (1986) referencing that *'close attention to the feelings, needs, desires and thoughts of those being cared for, and a skill in understanding a situation from that persons point of view, are central to caring for someone.'*(Held 2006: 31) Phillips (2007) strengthens the relational argument by affirming that the skill of building an empathetic and genuine relationship with the person for whom we are providing care is vital to the success of care delivery (Phillips 2007: 131). This, according to Philips (2007), goes beyond a one-way patient orientated interaction and a successful relationship between the provider and receiver of care can also be a catalyst towards job satisfaction, a phenomenon that was also identified and exposed during data analysis (Section 7.2 Data box 7.1).

A further aspect of Nodding's work which is considered by Held (2006:P31) is the suggestion that cognitive elements of a carers attitude are '*receptive and intuitive'* rather than *'objective and analytical'*. However, I would argue, based on the evidence presented in Chapters 6 & 7, that this suggestion is entirely contextual and dependent upon which element of the CT examination is

being considered. The task orientated technical elements of producing diagnostic images require an objective analytical approach whereby changes to exposure factors require a radiographer to be rational, logical and objective. The communication needed to reassure the patient and encourage them to comply with the examination may be considered as more intuitive based on the success of past experiences. Whilst achieving the technical elements of a CT examination may not be accompanied by the *'warm feelings'* (Held 2006: 30) traditionally associated with caring about a person , radiographers were shown to care about the patient, and their ongoing prognosis, through their disclosures, body language and tone of voice (Section 6.4.1). However, achieving technically accurate images as part of a task orientated process represents an additional and significant aspect of a holistic model of care in CT which includes recognising and addressing technical, physical, emotional and communication needs (Section 6.4.1). Held (2006:P32) also brings into the debate Tronto's belief that care excludes production, play and creative activity. As the production of diagnostic images is at the heart of what needs to be achieved during the care experience from both the patient and radiographer perspective, it must therefore be considered significant to the construction of care within CT. This means that the exclusion of production, and even creative, activity as part of care giving within the context of this study cannot be considered.

As previously described, Philips (2007:1) and Held (2006) agree that care is based upon relationships which stretch beyond the obvious family unit and encompass patient professional relationships that exist within the health and social care setting (Phillips 2007: 1). The concept of care as a static and definable practice is discounted by Phillips (2001) who instead writes from the position that care is a fluid and changing social construction, stating that *'the purpose of care is often defined by the reason why care is needed'* (Phillips 2007: 19). However, it is however Tronto (1993) who explicitly identifies that caring relationships are not always equal: *'Care is not an activity that occurs between equal and autonomous actors or objects, but between those who have needs and those who can provide needs'* (Tronto 1993: 145). Tronto (1993) believes that care cannot be defined as a universal

concept with regards to needs as these will vary depending on the specific context of the situation. As Tronto (2015:5) argues, determining the best ways of caring at a specific time and in a particular setting is dependent on a democratic process of assessing and meeting care needs. Care from Tronto's perspective is universal in the sense that all humans have needs that can only be met by the intervention of others (Tronto 1993: 110). However, whilst Tronto accepts human care involves the intervention of others which may bring some benefits to each person involved, she is explicit in exposing that accepted care practices within healthcare involve actors of unequal power coming together to determine an outcome (Tronto 2015: 10). In the context of CT, this outcome would be accurate diagnostic images. Tronto argues that the power imbalance between professional and patient places the care receiver in danger of losing their autonomy and sense of independence (Tronto 1993: 146). However, data supplied by patient 6 (Data box 8.2) challenges this opinion.

Data box 8.2

Supporting Data
"Because you have to drink so much water now before the scan and I don't like cold water *[medications and chemotherapy have made this patient cold all of the time]*, now I've got into drinking hot water so I'm not as cold. And I do drink hot water at home as well now. I quite like it now. Because I haven't got any taste and sometimes it seems a little sweet." *Patient 6* "I put on tights, leggings and jeans, two pairs of socks, hot water bottle and still have problems. But because they have the fans on to keep them *[the CT scanners]* cool. I went in there one summer and it was still so cold I couldn't stop my teeth chattering. I get so cold which is why I now go for the cannula before." *Patient 6*

This primary data (Data box 8.2) demonstrates that Patient 6 takes the active decision to drink hot water prior to her CT scans and makes personal arrangements to attend the oncology department prior to her scans for pre-cannulation in a calm warm environment. These are personal decisions and plans that she is empowered to make herself to enable and facilitate a smooth and more palatable examination when in the CT department.

Caring as a democratic ideal is introduced in later works by Tronto (2015:14) as a fifth phase of care: ‘Caring with’ which aims to break down the assumption that care is ‘necessarily hierarchical’ (Tronto 2015: 35). This is an aspiration shared by the SCoR who champion the ideal of patient radiographer partnerships (The Society and College of Radiographers 2013; Itri 2015; The Society and College of Radiographers 2018c; The Society and College of Radiographers 2018b). Tronto (2015:9) argues that all caring and every response to need involves a power relationship and therefore in healthcare practice all caregivers are ultimately in a position of power. In the context of the CT examination I would however argue that this should not be viewed negatively as patients within this study (section 9.2.2.1 Data box 9.5) actively place themselves in the hands of the professional whom they regard as being experts in their own field and the conduit towards the end goal of the production of technically accurate, high-quality, diagnostic images. As Carlsson and Carlsson (2013) agree, when patients feel secure with the situation they are in, they are comfortable to leave the responsibility for the technical aspects of the examination with the radiographer**.** In contrast, Mathers et al. (2011) argue that patients demonstrate a passive acceptance of what is happening during diagnostic imaging, but I would argue that this is not out of fear, but instead a desire to complete the scan as efficiently and effectively as possible. This is a shared goal with the radiographers and signifies a working partnership during the examination. This active, rather than passive, acceptance of what is happening, is achieved via the establishment of a relationship of mutual confidence (Carlsson and Carlsson 2013) and understanding of intent (Held 2006: 57). This embraces the view that caring is a relationship in which carer and cared for share an interest in their mutual well-being and does not require altruism on the part of the carer (Held 2006: 35).

In her work Held (2006:31) addresses the issue that carers must first care for themselves in order to successfully provide care to others. A concept also identified by Tronto, who like Held, recognises that carers will put the needs of others above the needs of themselves when adopting the role of the care provider (Tronto 1993: 109). Tronto (1993: 109) identifies that the care givers need to care for themselves may conflict with the care they must give to others. Carers are often responsible for a number of patients or events which may be in conflict with the needs of each other (Tronto 1993: 109). Data supplied by radiographers (Data box 8.3) would suggest this to be the case whereby breaks are forgone to provide patient care.

Data box 8.3

Supporting Data
"We've all had that one that you know, lonely patient who just wants to talk and you have to let them talk. Now you might do that knowing full well that you are going to miss your break, you might go home 10 minutes late. But I kind of think that if I can sort of keep it on track but just letting them talk. It's their time to me and that's what it's about and that's what patient care is." *Radiographer 3*

Of further interest is that Tronto (2015:6) believes that caregivers accept and learn to cope with caring in less than ideal circumstances and this aligns with the radiographers identified characteristics of being adaptive and reactive during everyday situations whilst working in CT. When we reflect back to Category 1 (Section 6.4.1) the perceived pressures of time constraints or having too many patients waiting are not ideal circumstances for the radiographers to provide the care they wish. However, the care received by those experiencing the CT scan, and the accounts provided by the participants (Data box 8.4) demonstrates that in keeping with Toronto's theories, radiographers adapt to their working environment and the external pressures with which they are faced, keeping the contributory problems hidden from the patients to ensure that the care experience remains unaffected.

Data box 8.4

Supporting Data
“You sort of hear all the problems, but I have no first hand of what I read about. You read about problems with staffing, money, operation cancellations and everything. It may be there, but it's well shielded from the patients. When you walk into a hospital, you never are aware that there is this crisis they sort of call it in the papers because, obviously whatever's happening behind, the front of house is working” *Patient 5* “Perfect I suppose. You know because, it was just as I expected it would be. It was, there was nothing that sort of pulled me up short, and it was good enough. I say perfect because it was good enough for me to notice that everybody was friendly, they are chatty, and they introduce themselves, and they are upbeat and this comes over, and that is why there is this sort of dichotomy I suppose, between what you hear on the news and then you go and then your experience, and you have to be pleasantly surprised. Because you are expecting at some point to see the chink where all the problem is, but you never see it you know. So, for a patient I think you're very impressed by that.” *Patient 5* “There's the odd one where you think I wish I had a bit longer, but yeah most of the time, but then, I think you know I've been in CT for a long time and it has changed, and I just wonder if you just adapting with the changes. Whether I'd have said that 10 years ago when we had half an hour appointments? You sort of adapt to the environment and your working conditions. *Radiographer 2*

Providing care is a complex process which, as an ongoing practice, shapes and constructs how individuals provide care (Tronto 2015: 8). Engagement with the act of providing care will, according to Tronto (2015:8), shape what we pay attention to, how we think about responsibility, what we do and how we choose to respond to the world around us. When translated into the healthcare setting, providing care shapes professional practice by making practitioners more attentive to care needs, more responsible for meeting those care needs, competent when meeting care needs and more responsive to specific care needs in relation to the environments in which they work (Tronto 2015: 8). It is also suggested by Tronto that when care givers actively take on responsibility, they become attuned to noticing responsibilities which are not being taken on by others (Tronto 2015). This helps to explain why those with more experience may question the care giving practices of the younger, or less experienced, generation (Data box 8.5).

Data box 8.5

Supporting Data
I hope it *[patient care]* doesn't get any worse. I don't think it's that bad, but I think the new generation coming in are more technology minded may be. They're happier just to sit and scan than being in the room and maybe clean-up a patient you know? You kind of notice patients you know that come down wet. I couldn't, I feel sorry for them, but I couldn't send someone back because I know I'd be thinking that's awful. So, it's a bit selfish of me really because it's sort of stopping me from feeling bad. But I will go and get them, I'll help them to get changed. But you know not everybody does. I'm not saying perfect. *Radiographer 2*

8.3 The Significance of the Patient Voice in Radiography

The NHS 5 year forward view (NHS England 2014) sets a governmental vision for a power shift within the NHS towards patients and the public. In response to this agenda the SCoR took a proactive approach towards understanding how to best engage patients and the public in radiotherapy and imaging practice by arranging a one-day workshop which resulted in agreement that to achieve true partnership between the SCoR, patients and the public, an additional shift was needed within the wider SCoR strategy (The Society and College of Radiographers 2018c). The patient voice has now become a central feature of the 2018-20 strategy of the SCoR (The Society and College of Radiographers 2018a). In response, the SCoR together with patient representatives, practitioners, and educators has co-created a set of guiding principles (The Society and College of Radiographers 2018c) to ensure that the SCoR's priorities relating to the *'centrality of the patient voice'* becomes embodied within the organisation. This is inclusive of the diagnostic and therapeutic ground level workforce. Of most interest to this review are the 15 identified core values (Appendix 17) which are presented directly from the patient perspective under the umbrella title of *'Service Delivery for Patient-Centred Care'* (The Society and College of Radiographers 2018c). Comparative analysis identified that all 15 core values identified by the SCoR are reflected within participant data included within this document and additional participant disclosures which have served to build analytical interpretations, but which are not explicitly presented within this thesis. As the analysed data used to construct Chapters

6, 7 and 9 was collected prior to the publication of the SCoR document, there are clear indications that a patient centred approach to diagnostic CT examinations was already being practiced by radiographers at the host institution. Whilst the SCoR (2018c) believe that patient and public partnerships to be implicit rather than explicit in practice, it must be considered that they are only implicit due to the fact they are common place and taken for granted on the part of radiographers, who view patient centeredness as an integral part of diagnostic imaging practice . However, as previously touched upon in Chapter 7, the notion of a 'true and equal partnership' within the context of a CT examination, or healthcare provision per se, is still being questioned.

8.4 The Role of the Diagnostic Radiographer

The SCoR (2017) define the role of the CT radiographer as autonomous and multifaceted. During the participant interviews, radiographers disclosed several generic attributes (Figure 8.1) which the professional group identified as being essential characteristics of a good CT radiographer.

Figure 8.1 Participant disclosures relating to the attributes of a good CT radiographer

The direct participant disclosures included within Figure 8.1 demonstrate a positive alignment between the SCoR definition of the CT radiographer's role and the radiographer's perception of themselves. It is apparent that each of these attributes are applicable to the NHS workforce as a whole. However,

what is notable is that a majority of these attributes are all associated with good nursing and medical practice as identified within *The NHS constitution* (Department of Health 2015a; Department of Health 2015b) and associated nursing publications detailing the 6C's of compassionate care as described in Chapter 3 (see section 3.5.2.7 Figure 3.4).

The nature of radiography practice has been identified as dualistic meaning that whilst examinations are useful as diagnostic tools, some, including CT, also present risk to the patient from radiation exposure (Lundvall et al. 2014). In an attempt to conceptualise radiography as a profession, Ahohen (2008) found that unlike other scientific professions, radiography is made more complex by the combination of the socio humanistic, scientific and technical knowledge that is required by radiographers to enable the execution of technical procedures whilst providing patient centred care. Lundvall et al (2014) draw on the work of Ahohen (2008) when attempting to evaluate radiography practice in Sweden, identifying that practice is not only dualistic but situational and modality dependent. Also considered within Lundvall et al's (2014) work is a study by Andersson et al (2008) who produced a concept analysis of the radiographer's professional work in Finland. Lundvall et al (2014) argue that while Andersson et al (2008) recognise the complexity of radiography practice, their work fails to identify the manner in which specific practice competencies blend to formulate a working process. The absence of this data within the radiography evidence prompted Lundvall et al (2014) to evaluate the practice of cross-sectional radiographers (those undertaking CT and/or MRI examinations) in terms of their practical and professional competencies and how these competencies adhere to construct a successful diagnostic examination. Lundvall et al (2014) present the CT/MRI examination as being constructed around a problem-solving process which involves radiographers taking responsibility for obtaining images that can be used to aid diagnosis. This process is inclusive of radiographers making judgments and technical adaptations relating to imaging techniques and image quality assessment (Lundvall et al. 2014). These adaptations and assessments are executed in relation to individual patients, their presentation and their specific technical requirements (Lundvall et al. 2014). A practice

combining the operation of technical equipment with communication and patient care (Lundvall et al. 2014). Unfortunately, an exacting definition of what constitutes ‘patient care’ in practice was absent from the Lundvall et al (2014) publication.

Whilst there is limited evidence evaluating the role of radiographers as providers of direct patient care, a study by Lundén et al (2012) considering the role of the ‘nurse radiographer’ during interventional radiology procedures (Lundén et al. 2012) is considered to be comparable to the role of the diagnostic radiographer within CT. To clarify the term ‘nurse radiographer’, in the context of the Swedish healthcare setting applies to registered nurses who work within diagnostic radiology. The main theme identified by Lundén et al (2012) was ‘sensing and responding to patients.’ This model of care has four interrelated elements: creating a trusting atmosphere, creating a dialogue with the patient, dealing with unpredictable outcomes, and dealing with pain and agony (Lundén et al. 2012). ‘Nurse radiographers’ believe that the initial first contact with the patient is pivotal to the outcome of the patient professional encounter and the perceived success of the care experience (Lundén et al. 2012). There is also recognition that whilst the time to build a trusting relationship between the patient and nurse may be short, it is made achievable by the one to one nature of the interaction (Lundén et al. 2012). Unlike nurses within ward environments, nurse radiographers take responsibility for only one patient at any one moment in time during the examination (Lundén et al. 2012). This makes the interaction and care experience more patient focused (Lundén et al. 2012). In the context of the CT examination, whilst the professional title and graduate level training of the CT radiographers may be different to that of the ‘nurse radiographer’, their role during the examination with regards to relationship building and the provision of care via the assessment and response to individual need is comparable. Radiographers have been shown to provide both practical and emotional support during painful and distressing procedures (Mathers et al. 2013), validating the notion that radiographers do provide patient centred care in line with published nursing care practices (Lundén et al. 2012).

Providing care that is traditionally associated with nursing practice was further disclosed within participant data and is included in Data box 8.6.

Data box 8.6

Supporting Data
“Yeah because when patients come down wet you change the sheets you clean them up, even wash round their testicles. He messed himself on the table and I thought we can't slide him back because it's going to go everywhere and there was a nurse with him but yeah I don't know why but I ended up washing round his balls which were covered in brown paste. I’ve never had to wash a bloke's testicles ever before. I've avoided it because it's a nursey job not a radiographer’s job, but on this occasion, I felt it was appropriate because I didn't want to put him back in his bed which I had also just cleaned.” *Radiographer 8* “Patients you know that come down wet you know, I couldn't, I feel sorry for them, but I couldn't send someone back because I know I'd be thinking that's awful. So it's a bit selfish of me really because it’s sort of stopping me from feeling bad but I will go and get them, I'll help them to get changed.” *Radiographer 2* “I think it's time because people don't realise until you've sat in a hospital bed how bloody uncomfortable it is when you've made a mess of it *[meaning radiographers untucking sheets to transfer the patient onto the scanner]*, and somebody else might not be doing it for the rest of the day. That's the other thing, because wards are so busy that bed will stay like, if you're lucky they'll change the sheets tomorrow.” *Radiographer 6* “It's actually giving the patient what they need within boundaries. So, if they're in a soaking wet bed and have come down from the ward like that, don't send them back to the ward like that. Take the time and change them and if you don't have the time ask the nurses in the bed bay to do it. Again, not sympathise with people but understand what they need and giving them that type of professional care [long pause]. Being professional, being polite. It is really just giving them what *they* need. *Radiographer 9* “We will have patients that come down and if they’ve got wet bed everybody's like, ‘right let's not send this patient back’. They'll change the bed, change the patient, whatever is within our capability. Because some of it you can't do within a CT room it's not practical or you know, you do your best and you don't send anyone back with dirty sheets. And it's the same as when they come down with blood on the sheet from the ward or something. Put a fresh sheet on, that doesn't take two minutes you know.” *Radiographer 10*

8.5 The Radiographer Patient Relationship in High Technology Imaging Environments.

As previously identified within chapter 1, concerns exist that within high technology imaging environments that patient care may be overlooked due to the focus of the radiographer being directed towards the technology and not the patient (Murphy 2001; Murphy 2006). A focused review of the literature around this subject indicates that there are conflicting views regarding radiographers and their interactions with patients. Whilst research related to specific patient groups such as those living with MS (Laidlaw and Henwood 2003) and the deaf community (Davies and Channon 2004) describe radiographers as cold, matter of fact, or pre occupied and rushing (Laidlaw and Henwood 2003; Davies and Channon 2004), Murphy (2001) identifies radiographers as caring and concerned practitioners. Contradicting this were comments disclosed by patients in the Mathers et al (2011) patient experience study, who expressed feelings of impersonal atmospheres. However, it was not made clear within the study (Mathers et al. 2011) as to which professionals or services the patients were referring to as the research considered the overall patient journey as a cancer patient and not just their imaging experiences.

In an ethnographic study by Strudwick (2016) radiographers were found to typify patients based upon limited referral information as a tool to help build a mental picture of the patient and to plan and manage workloads. For example, identifying patients via the examination they were attending for (i.e. foot x-ray) enabled radiographers to decide how long the examination would take based on past experiences and their own level of expertise (Strudwick 2016). If the condition of the patient were disclosed, then this information was used as a tool to assess how the patient may need be addressed during the examination (Strudwick 2016). Whilst the act of ‘labelling’ patients may expose concerns relating to the objectification and depersonalising of patients, Strudwick (2016) observed that behaviours interpreted as ‘labelling’ did not occur within proximity of the patient. When considered within the specific context of my own study, the findings presented by Strudwick (2016)

indicate that the mental preparation and judgements observed by Strudwick, formulate part of the preparations needed to engage with the patient during the swift interaction of the radiological examination. This is validated by Lundvall (2014) who reported that plain film radiographers believed they were able to predict a patient's underlying pathology based upon initial observations. These assessments enabled the radiographers to adjust their imaging techniques regarding positioning, to accommodate the injuries and acquire diagnostic projections accordingly (Lundvall et al. 2014). To hypothesise that radiographers do not provide patient centred care based upon the observations that radiographers actively label and pre-judge patients is a misguided supposition. Instead, consideration should be given to the notion that radiographers are using past experiences and knowledge to formulate plans and execute behaviours within short periods of time and with little pre-examination information. A phenomenon which can explained using the principles of *Schema Theory* (Walker et al. 2004; McVee et al. 2005; Upton 2012; Gross and Nancy 2014).

Schema Theory is a cognitive learning theory which seeks to explain how we structure the knowledge we use to interpret the world around us and shape our behaviours and actions (Walker et al. 2004; McVee et al. 2005; Upton 2012; Gross and Nancy 2014). According to the theory, knowledge is organised into a collection of memories, actions and strategies which enables us to predict the world around us and generate mental short cuts in our assessment of any given situation (Walker et al. 2004: 87). These cognitive constructs are known as Schema and represent a mental framework that mediates how we view, interpret and act within the environments in which we live and work (McVee et al. 2005; Upton 2012). When considering Schema Theory in conjunction with the findings of Strudwick (2016) the 'labelling' behaviours displayed within clinical practice can be understood on a deeper level. In the context of a radiography examination Schema Theory suggests that when presented with a situation to which we have had prior exposure, we locate it within our existing knowledge base or pre-constructed schema and then act in accordance with our constructed expectations of a given situation, taking appropriate actions

to achieve a given task based on past experiences (McVee et al. 2005; Upton 2012). Whilst memory schemas are shaped by cultural and social factors which could explain why radiographers as a group display similar behaviours (Walker et al. 2004), individual radiographers will encode the information they store in relation to their own framework of understanding (Upton 2012). Therefore the memories and subsequent actions they choose to deploy will continually evolve and expand with time, thus making the ability to predict and act upon a situation quicker and more intuitive as clinical experience grows (Gross and Nancy 2014: 351).

Further contradicting the issues highlighted within Chapter 1, which suggest that diagnostic departments are not person centred environments (Hayre et al. 2016) are the additional observations made by Strudwick (2016) regarding radiographers' behaviour during patient interactions. Strudwick (2016) observed radiographers taking time to sit and talk with anxious patients even though the department was busy. The action of taking extra time to reassure individual patients contributed to the success of the examination and was considered significant to the radiographers construction of care (Strudwick 2016). Disappointingly Strudwick (2016) also identified that the radiographer's ability or willingness to empathise with the patient and provide additional support appeared to be dependent on whether the radiographer deemed a patient and their condition to be deserving of the extra time and support (Strudwick 2016). Previous work has reported that radiographers find it difficult to show empathy towards patients to whom they feel are less deserving (Strudwick 2016). Unfortunately, this is not limited to Strudwick's study and was mirrored by data provided by radiographer 8 (Section 7.2 Data box 7.2). The evidence supplied by radiographer 8 highlights the significance of a mutually respectful interaction during a radiological examination and how the attitude of the patient is significant to the construction of care. When the patient loses respect for radiographer and/or the service, the relationship and level of care provided has the potential to break down.

Strudwick (2016) hypothesised that whilst the act of 'labelling' the patient is conducted to facilitate workload management and to plan impending

interactions, the practice may also be associated with an active desire to remain distant from the patient. Radiographer participants within my own study disclosed a need to distance themselves from the situation and/or the patient condition to ensure task completion in traumatic and emotional setting. However, that did not mean they were unable to empathise with patients and their care needs. Instead, there is a strong indication that during acute trauma cases, the completion of tasks to enable the acquisition of diagnostic images to facilitate swift treatment and diagnosis (Booth 2008), becomes the predominant need which must be addressed at that point in time and in the context of each specific CT examination. Distancing, as a behavioral concept, is recognised as an enabling tool which permits continued functioning in traumatic or difficult situations (Blomberg and Sahlberg-Blom 2007). However, such behavior is associated with stress burnout which could lead to suboptimal care if continued over a sustained period of time (Blomberg and Sahlberg-Blom 2007).

Limited knowledge of presenting patients and their underlying physical and psychological condition can affect the appropriateness of the care provided (Challen et al. 2018). It has also been shown to affect the level of individualised planned care that radiographers are able to provide (Lundvall et al. 2015). However, such knowledge limitations are used by healthcare professionals as a tool to strike up conversations with the patient regarding their history and health conditions as part of the relationship building process within radiology (Lundén et al. 2012). As described in section 7.2, talking and engaging with the patient was shown to have a positive effect on the radiographers and provides evidence to suggest that a two-way positive radiographer patient interaction aids in the generation and maintenance of a positive working environment. As positive working environments have been identified as a catalyst to the provision of high quality patient care (West et al. 2011; Maben et al. 2012; Department of Health 2015a; Dawson 2018), it can be argued that radiographers are actively contributing to the construction of high quality care environments through their actions and interactions with the patient. Whilst this may not be a truly altruistic interaction, provision of care as identified in section 8.2 does not require altruism on the part of the carer,

and in turn represents a significant element of the construction of care within CT (Held 2006: 35). Furthermore this interpretation aligns directly with the expectations of care as presented within *The NHS constitution* (Department of Health 2015b; Department of Health 2015a) and discussed in Chapter 3.

8.5.1 Communication

Poor communication is identified as a barrier to person centred care (Challen et al. 2018). Whilst advice regarding good radiographer patient communication for the dementia specific population includes using a slow calm voice, ensuring eye contact, the use of simple language, closed questions and repeated instructions (Challen et al. 2018), it must be considered that aspects of this approach are appropriate to the wider patient population especially where underlying phycological and physical health conditions may be unknown to the radiographer. As the provision of clear information has been extracted from a review of studies with a diverse patient population (Munn and Jordan 2011) as being a key factor which provides patients with a sense of control, the radiographers ability to provide information appropriately to a range of patients is considered significant to the construction of care and perceived experience within CT.

Non-verbal communication in the form of maintaining eye contact has been reported as a method of establishing a calm and caring environment (Lundvall et al. 2014). Such environmental factors are perceived to instil trust and provide patients attending for interventional radiological procedures with feelings of security (Lundén et al. 2012). Nightingale et al (2017) strengthen the argument by reporting that during initial staff client (patient) interactions, staff are observed to deploy varying strategies in an attempt to gain the trust of the client whilst gauging their level of understanding and allowing the evaluation of underlying or overt anxieties. This includes good preparation to convey confidence, being attentive to individual presenting needs, hand holding when appropriate and breaking awkward silences during procedures (Nightingale et al. 2017).

MRI is an imaging modality associated with increased anxiety both prior to and during examinations (Carlsson and Carlsson 2013; Munn et al. 2014). Taking time to build a trusting dialogue with the patient has been shown to be significant to the success of the examination and alleviating anxieties prior to the examination (Carlsson and Carlsson 2013). There is general acceptance that increased anxiety before and during an MRI examination, will lead to patient movement and reduced image quality and this is of equal significance within the CT clinical environment. However, unlike MRI, CT imaging uses ironizing radiation which means that any repeated scan due to movement carries additional risk to the patient, an issue also identified by Nightingale et al (2012) in relation to single-photon emission computed tomography – computed tomography (SPECT-CT). Munn (2011) found that patient experiences and feelings were applicable across MRI and CT. It is therefore not unreasonable to suggest that the significance of the trusting dialogue and relationship building prior to the examination are of equal importance to alleviate patients' anxieties during both MRI and CT examinations. It is however noted that in both the Lundén et el (2012) and the Carlsson and Carlsson (2013) study that initial patient professional interactions occurred in calm preparation rooms away from the technical scan room or interventional environment. This is a practice not associated with many other diagnostic environments such as CT or plain film radiography where preparation time for the patient is limited to a conversation within the scan or x-ray room immediately prior to being directed onto the imaging couch. However, a well prepared and calm environment can be generated within the scan room, and this has been shown to be significant to the patients perception of experience (Nightingale et al. 2012; Challen et al. 2018).

Booth (2007) explored influential factors associated with radiographer patient communication and concluded that communication during radiographer patient interactions is influenced by four overarching factors: the characteristics of the radiographer, defined in terms of personality and confidence; the characteristics of the patient, defined in terms of age, illness or injury, and behaviour; the need to produce diagnostic images; and the need to keep the department running (Booth 2008).

As previously identified patient condition may affect the radiographers ability to empathise (Strudwick 2016) but the communication style used by radiographers during diagnostic examinations, has also been shown to be affected by the patients presenting condition (Booth 2008). Dominant interactions on the part of the radiographers become necessary in cases of patient intoxication or overfamiliarity (Booth 2008). Whilst radiographer participants within Booths' (2008) study identified that colleagues have inherent distinctive and individual communication styles, there is recognition that there is often a need to negotiate a communication approach which is individulaised to each patient (Booth 2008).

When communication is considered within the context of the construction of care in CT, it is agreed that good caring relationships are characterized by trust and a mutual understanding of intention (Held 2006: 57) and therefore good and appropriate communication inclusive of listening to the patient and responding to any concerns raised is essential and fundamental to the co-constructed model of care experienced and delivered within CT (Carlsson and Carlsson 2013). This means that whilst the patient is placing their trust in the radiographer, the radiographer must also trust that the patient will not act inappropriately during the scan, potentially causing harm to themselves or reducing the quality of the examination (Nightingale et al. 2012). This ideal can only be successfully achieved by radiographers who work confidently and instil trust through appropriate and courteous communication and actions (Carlsson and Carlsson 2013; Nightingale et al. 2017).

8.6 Patient Experience in High Technology Imaging Environments

One of the main categories identified during analysis was that the perception of care within CT is dependent on, and influenced by, the relationship that participants construct with technology. This relates to the physical 'hard technology' (Murphy 2006) in the form of the actual equipment, the technical processes and procedures deployed to operate the technology and the experience of interacting with the technology to achieve the end goal of a successful diagnostic examination. This relationship is not exclusive to the

radiographer population and it has been identified within the data that patients also construct their own personal relationships with the technological environment. In keeping with the theories of Barnard (2002), it is agreed that there is a clear *'philosophical distinction between the operation and design of technology and the human experience within the environments that they inhabit'* (Barnard 2002) .The concept of the alien environment or '*being in another world'* (Törnqvist et al. 2006) as identified during analysis is not specific to CT patients or this study. Törnqvist et al. (2006) reported the feelings of *'being in another world'* as a significant theme experienced by patients during MRI imaging. Törnqvist et.al (2006) report the strange environment and isolation of the MRI scanner as being the catalyst to this interpretation. However on reflection, and when participant data is considered alongside the Törnqvist et al (2006) study, it is argued that it is the perceived threat to one's self-control, generated through exposure to such an unusual situation (Törnqvist et al. 2006), that holds more significance when exploring behaviours, constructions and perception.

Several published studies (Mathers et al. 2011; Munn and Jordan 2011; Nightingale et al. 2012; Carlsson and Carlsson 2013; Mathers et al. 2013) evaluating a range of imaging modalities including CT, MRI, US, Mammography and SPECT-CT, agree that the patient experience and the associated relationship patients have with the imaging procedures are complex, varied and uniquely personal. Even within the same patient group, the route into, and range of diagnostic examinations experienced, was far from structured or uniform (Mathers et al. 2011). While diagnostic services are valued as an integrated part of the patients illness journey (Mathers et al. 2011), imaging holds great significance to the patient. Nightingale et al (2012) exposed that imaging is pivotal to both a patient's medical and social situation, with some patients viewing diagnostic examinations as a conduit towards treatment options (Mathers et al. 2011) while others disclosed that a verified diagnosis can denote the difference between receiving or being denied social monetary benefits upon which patients may rely (Nightingale et al. 2012).

Whilst some published studies are limited to a single and/or first time examination (Nightingale et al. 2012; Carlsson and Carlsson 2013), others (Munn and Jordan 2011; Mathers et al. 2013; Nightingale et al. 2017) include elements of longevity, validating that the perception that experience changes over time and with exposure to the technology and the clinical environment (Munn and Jordan 2011). It is also identified within the literature that there is a vast discrepancy between patient expectations, in relation to diagnostic examinations, and their subsequent constructed reality, with actual experience of the examination influencing the interpretation of the lived experience (Nightingale et al. 2012; Carlsson and Carlsson 2013). In a systematic review of patient experience studies focusing on CT and MRI examinations, Munn (2011) concluded that diagnostic imaging must be experienced to be truly understood. As this is neither an ethical or practicable option for many radiographers, it is the patient voice which becomes paramount to understanding the experience and therefore care within diagnostic imaging.

Work by Mathers et al (2011 & 2013) focuses on the experience of patients who have received a positive diagnosis of cancer. Whilst each study evaluated two different patient experience pathways; men with prostate cancer undergoing imaging procedures (Mathers et al. 2011), and women diagnosed with breast cancer attending for breast imaging (Mathers et al. 2013); the patient groups shared consistencies relating to the differing imaging processes experienced. A trend observed by Mathers et al (2011 & 2013) was that patients actively tolerated pain and discomfort as a means of getting to the bottom of a problem or to gain reassurance post-surgery or treatment, viewing the diagnostic process ‘a necessary evil’. Consequently, Mathers et al (2011) reported that patients were more anxious with regards to the results of the test rather than the examination itself. Whilst it could be argued that the findings reported in the later study (Mathers et al. 2013) are influenced by author bias, these concepts are mirrored within data included in section 6.4.2 and additional data provided by patient 3 (Data box 8.7).

Data box 8.7

Supporting Data
“I've got ongoing back pain and it's just gonna get worse. But my fear is that I might not be able to keep going. So that's what I fear more not the scan itself.” *Patient 3*

Nightingale et al (2012) identified that anxiety in patients attending for SPECT-CT imaging can be subdivided into 3 categories: fear of the underlying medical condition; fear of harm during the procedure; and fear of the procedure itself. Nightingale et al’s (2012) interpretations are from the patient perspective indicating that our professional understanding of anxiety may underestimate the complexity of the patient’s emotional and psychological needs during diagnostic examinations. However, as Nightingale et al (2012) also identified, patient fears were alleviated by staff interactions, suggesting that staff within these specific diagnostic departments were meeting with the complex needs of the patient and therefore providing patient centred care.

An additional deeper understanding of patient feelings and behaviours experienced during MRI examinations is presented by Carlsson and Carlsson (2013). The Swedish interview research (Carlsson and Carlsson 2013) identified that whilst the results of the scan were of great significance to the patient and recognised as a catalyst towards increased anxiety in relation to an impending or completed scan, such feelings were not predominant during the actual scan experience. Instead, patients became more focused upon managing the situation in which they had been placed at that specific moment in time with emphasis placed on the need to complete the scan successfully (Carlsson and Carlsson 2013). Carlsson and Carlsson (2013) also identified that past lived experiences can trigger unexpected emotions during imaging and that these have the potential to significantly affect patient behaviour and therefore the skills required by the radiographers to manage the situation. The potential for this to happen was identified during analysis of patient 2 data (Data box 8.8) and therefore the evidence provided by Carlsson and Carlsson (2013) supports the interpretations made in this

study, arguing that the initial presentation of the patient may be masking underlying or unexpected emotional need.

Data box 8.8

Supporting Data
"Well I mean she *[patients daughter]* had cancer so we all know the treatment can be horrific [pause] and it didn't work, and we lost her [pause]. But I think the hardest thing she found was just the pain and the discomfort. The coping with the treatment, it was horrendous. And we all know that, and she knew that, eyes open wide. But I think throughout the treatment she wished she hadn't, but you know it's just difficult. I think she felt, I think she felt that the treatment was very difficult for her to cope with. But, and of course as a mum, having to you know, watch that, watch her experience. That was difficult to say the least. It was distressing it was a thing of nightmares. But you know, you have to cope, you have to cope because someone needs to be strong around her, so I basically coped for her [pause]. Yeah you relive those things [pause] I don't know I think most people have lost someone or seen somebody go through cancer that they've loved, they just say to you the same as I'm saying to you [pause] You, never get over that. You don't expect to. You don't really want to. But you cope. You learn to cope with that. You have to get on with your life and basically that would be what she would want, and she would have been pretty cross with me. She was 34 you know when she died, and she'd have been pretty cross if she'd have seen me moping around and you know not getting on with my life. She'd have said 'look come on mum pull yourself together' and of course when you go into a scanner yourself those thoughts go through your mind. It wouldn't be natural I don't think. But you know, I'm you know, it's 10 years now, so. And time does help. But of course, like any other form of grief you get flashbacks or a day when it just takes you by surprise and you suddenly think 'woe!', I didn't know that was there still and it's the little things like seeing somebody cross the street that looks just very much like her you know? You think 'oh!' And that is like it's a stopper and on the pavement, do you know what I mean? I mean really what I find for myself is, having seen my daughter experience that, I am able to experience anything like that *[the CT scan]* myself which is **absolutely nothing** *[emphasised]* compared to what she went through. You know it makes it much easier for me as a person to get into that scanner and let it, you know, let the nurses do their job because I'm not under any threat *[again downplaying her condition as previous patient participant did]* not in any danger you know you know I mean? There's not an outcome for me like there was for her. There's not treatment at the end of it like there was for her. You know? Mine was just to see what was going on with my back and you know the other one was to see what was going on with my heart. She knew straight away after her initial scan that she got this tumour. Within hours basically, that she'd got quite a large tumour there. So completely different. I think if she'd have been, if *[daughters name removed]* had been sitting here, that would have been, maybe the interview would have been completely different. And of course, it's the scale isn't it of what that person is having to go through compared to *just me*. Having a scan because of been taken ill because of had a bit of a problem here *[pointed at chest]*." *Patient 2*

The above data provides an extremely personal and reflective account of the patients own experiences and those of her daughter. Despite the passing of 10 years since her daughter's death, the experiences remained raw to patient 2, influencing her own perception of illness, the severity of her

condition and even her behaviour during the scan. The death of patient 2's daughter had a profound effect on her emotional well-being, and in the context of this patients' reality, the scan environment had clear potential to trigger emotional distress and imbalance.

One significant observation shared by Mathers et al (2013) and Carlsson & Carlsson (2013) was that mammography patients repeatedly reported that it was the attitude of the radiographer that became crucial to the interpretation of the experience constructed by the patient. The consequence of a single bad experience could be so destructive that it could prevent patients attending for further crucial examinations (Mathers et al. 2013; Nightingale et al. 2017). Whilst an outsider may consider breast imaging clinics to be less pressured than diagnostic departments providing emergency services, Mathers et al (2013) clearly state that time to get to know patients is a luxury radiographers working within mammography do not have and as it was identified that *'a pleasant word and a timely explanation of what was happening went a long way to alleviate anxiety and discomfort during the procedure'* (Mathers et al. 2013). Mathers et al (2013) concluded that there is an essential need for radiographers to be provided with the opportunity to learn non-traditional communication techniques, including neurolinguistic methods such as rapid rapport skills (Mathers et al. 2013). Reeves and Decker (2018) concur with this statement and argue that the significance of the communication skills needed to manage patient interactions and complex situations within radiology may be underestimated.

8.6.1 The Problem of the Stoic Patient

Whilst the significance of coping mechanism are widely discussed in relation to claustrophobia and MRI imaging (Munn et al. 2015; Tugwell et al. 2018; Tugwell-Allsup and Pritchard 2018), the phenomenon is not widely documented as being significant to the field of CT (Murphy 2001). However, Murphy (2001) demonstrated that patients express equal anxieties in reference to experiences within the CT scanner as those attending for MRI. This highlights the significance of the radiographer's ability to recognise each

examination from the individual patient perspective as an uniquely constructed experience (Murphy 2001; Munn and Jordan 2011) and to interact with each patient throughout the examination based upon the patients individual presenting condition and behaviours.

The contradictory statements and behaviours displayed by patients which were identified during data analysis (section 7.3 Table 7.1) mirror those of the patient population identified within a qualitative study by Nightingale et al (2012) when exploring the patient experience of cardiac SPECT-CT. They identified incidents where patients had hidden their anxieties from the professional staff but openly disclosed them to the researcher after the examination. In an earlier study by Murphy (2001), patients also displayed emotional denial when discussing their experiences during MRI examinations. Murphy explained this behaviour using theories relating to masculinity as it was an all-male patient population (Murphy 2001). These patients were observed exiting the MRI room *'sweating profusely and physically shaking'* (Murphy 2001: 200) but when initially questioned each gave a typical response such as *'Yes it was ok'* (Murphy 2001: 200). The complete denial of emotions only became apparent as the interviews progressed and the patients became more open with their disclosures away from the scan room. Murphy (2001) argued that when male patients are disturbed by technological experiences, they may hide their emotions as they perceive this to be an expression of weakness. Although Nightingale et al. (2012) also suggested that these behaviours were observed primarily in male participants, evidence presented by the patient population within my study (section 7.3 Table 7.1) suggests that this is not a phenomenon exclusive to the male population as both male and female patient participants were shown to display the same behavioural traits.

Evidence from the existing literature (Murphy 2001; Nightingale et al. 2012; Carlsson and Carlsson 2013) validates the assumption that all patients attending for imaging are potentially more vulnerable than they choose to present to the radiographer. Evidence presented by the patient participants within section 7.3 Table 7.1 suggests that there is potential for all patients to

feel the same levels of isolation during the data acquisition phase of the scan, no matter how the patient presents themselves externally. Munn (2014) has identified that radiographers are able to pick up on subtle cues such as tone of voice and body language to suggest that patients are actually feeling more anxious than they openly admit. In a later study by Nightingale et al (2017), researchers observed that radiographers working within breast assessment clinics were adept at recognising and acting upon non-verbal cues. Whilst the imaging environment within the study (Nightingale et al. 2017) may be considered vastly different to that of CT clinical environment, the study supports the notion that radiographers, as part of professional practice, are able to recognise and act upon subtle cues to provide patient centred care whilst working in a technical environment and concurrently performing technical tasks. It is, however, suggested that if radiographers fail to recognise the potential vulnerability of all patients, regardless of how they externally present themselves, there is a risk that attention may be focused upon giving extra time and consideration to those who present with overt cues indicating more specific needs and consequently neglecting the needs of those who are not comfortable with asking for help (Nightingale et al. 2012). Bleiker et al (2018) argues that vulnerability is not a state confined to specific groups based on age or disability. In keeping with the findings relating to the stoic patient masking vulnerabilities and anxiety, Bleiker et al (2018) hypothesise that all patients are, to varying degrees, vulnerable due to illness, pain, fear and anxiety. Psychological diversity is identified as worthy of consideration when aiming to identify and react to individual patient needs (Bleiker et al. 2018).

Using data taken directly from the patient voice, Bleiker et al (2018) were able to identify that the feelings and emotions experienced during a radiography examination had the potential to leave a lasting impression upon the patient long after the examination. Patient data form both the literature and my own study has identified that some patients may deliberately, or unintentionally, hide their feelings from the radiographer. Proposed explanations to account for these actions include a desire to cooperate, conformity or obedience to an authority figure and internalised constructions

of socially acceptable behaviour (Murphy 2001; Nightingale et al. 2012; Carlsson and Carlsson 2013; Bleiker et al. 2018). In order to provide care consistent with meeting the underlying needs of all patients, radiographers must remain vigilant to the disclosure of subtle cues exposed by the patient and look beyond any external appearance of confidence which may mask underlying insecurities.

8.7 End of Life Care.

Published professional documentation entitled *The Role of the Radiographer in Computed Tomography Imaging* (The Society and College of Radiographers 2017), states: *'Radiographers must be mindful of different emotions and behaviours expressed due to uncertainty, fear and anxiety relating to the scan and the results.'* (The Society and College of Radiographers 2017: 5). Radiographers within all diagnostic modalities interact with a diverse range of patients, many with complex medical and psychological conditions and this increasingly includes patients following palliative care pathways. Recommendations made by the Leadership Alliance for the Care of Dying People (LACDP), stipulate that *all* staff who have contact with the terminally ill patients must have the skills to care for them compassionately and effectively (White 2017; NHS Emlpoyers 2018). Modern palliative medicine provides hope and extended life to patients who survive with progressives diseases for many months or even years (Lewis et al. 2008). As a consequence, diagnostic imaging now plays an even greater role within the treatment pathways of those living with cancer. White 2017 has highlighted the lack of appropriate end of life care (EoLC) education provided to radiographers in the context of therapeutic radiography (White 2017). From this evidence (White 2017) an assumption can be made that as there is a lack of theoretical education relating to EoLC reported within the therapeutic arm of radiography, there may be even less evident within diagnostic radiography education. Unfortunately to date there is no published data available to validate of refute these claims. In light of the evidence provided by the radiographers (Section 6.4.1.2 Data box 6.5) it is suggested that within diagnostic radiography, greater consideration needs to be given to

the provision of education around the subject of EoLC, including palliative medicine, supportive care, mechanisms of death and dying (White 2017). Whilst radiographers have provided evidence to suggest that they believe formal taught education cannot be replaced by on the job experience and real-life interactions (see section 9.2.1), there is clearly a place for formal education at pre- and postgraduate level to underpin clinical learning.

8.8 Emotional Intelligence in Radiographers

Originally conceived as a proposal which suggested some individuals possess the ability to reason about, and use, emotions to enhance thought more effectively than others (Mayer et al. 2008), Emotional Intelligence (EI) is increasingly evaluated and identified as a potentially influential trait within healthcare practice and associated professional behaviour (Mackay et al. 2015). As with many psychological constructs a single agreed definition of EI does not exist (Birks and Watt 2007). EI refers to the ability to carry out sophisticated information processing about one's own and other people's emotions, including emotionally relevant stimuli, and to use this information to guide thinking and behaviour (Mayer et al. 2008: 503). Chapter 6 identifies that radiographers perform a series of assessments relating to patient needs and adjust their behaviour and actions to meet these needs. It is therefore conceivable that EI could be an influential explanatory concept significant to the construction of care in CT.

Whilst the EI of radiographers has been explored within the literature (Mackay et al. 2012; Mackay et al. 2013; Mackay et al. 2015; McNulty et al. 2016), the research has limited diversity. Within the wider healthcare setting, the validity of EI as an explanatory behavioural construct is also contested (Birks and Watt 2007; Nightingale et al. 2018). Of most interest to this study is the potential relationship between EI and patient centred care. Two reviews exploring this relationship were identified (Birks and Watt 2007; Nightingale et al. 2018). Unfortunately, evidence within these reviews to support or refute the concept of EI as influential to the provision of patient centred care was limited and unsubstantiated (Birks and Watt 2007;

Nightingale et al. 2018). Within the radiological evidence base, EI is presented as being positively associated with compassionate and empathetic care, the ability to cope effectively with organisational pressures, and professional patient relationships (Mackay et al. 2012; Mackay et al. 2013; Mackay Stuart et al. 2015). Mackay et al (2012) report that the emotional ability of the professional workforce has the potential to impact upon the quality of human interactions. It is therefore suggested by Mackay et al. (2012) that within a healthcare setting where the patient's willingness to comply with the examination is paramount, the emotional intelligence of the radiographer group may influence the success of the examination.

Radiography specific research (Mackay et al. 2012; Mackay et al. 2013; Mackay et al. 2015; Mackay Stuart et al. 2015; McNulty et al. 2016), has explored, benchmarked and published data specific to the EI of radiographers within the UK and Australia. When comparing the diagnostic and therapeutic workforce, Mackay et al (2013 & 2014) reported that no significant difference exists between the diagnostic and therapeutic arm of the profession with regards to EI. This evidence challenges the hypothesis that as each of the specialities perform vastly different roles within the overall patient care pathway, the psychological make-up of the radiographers must also be very different (Mackay et al. 2013). Mackay et al (2012) describe anecdotal evidence to suggests that radiographers within varied radiological specialities may prioritise technology and patient care differently depending on the personality type and EI traits of the different professional groups. However, whilst Mackay et al (2012) disclose hypothetical analogies regarding the differences between the diagnostic and therapeutic professions and the individual differences between radiographers within diagnostic sub specialities, data collection for the studies utilised only a 'short form' Trait EI questionnaire (Mackay et al. 2012; Mackay et al. 2013). The consequence of this action, as disclosed by Mackay et al (2012), is that the method limited the authors ability to draw truly meaningful conclusion from the data. Birks and Watt (2007) also expose the faults of self-reporting questionnaires when assessing EI, identifying that the reports are open to manipulation through learnt and fake responses. As there are no identifiable disparities between

the EI of different professional groups, and because the data collection methods used limit the validity of the available evidence, the influence of EI and the construction of care within specific care environments such as CT remains questionable.

In a later international study comparing the EI of student radiographers against a qualified population, Mackey et al (2015) state that whilst EI outside of the healthcare setting has been shown to remain stable over age, EI scores can be improved through education and reflective activities (Mackay et al. 2015). Mackay et al (2015) reported that students consistently recorded lower EI scores than their qualified colleagues demonstrating a distinct difference between radiographers at the beginning of their career compared to those who had been practicing for longer (Mackay et al. 2015). Nightingale et al (2018) also identified evidence to suggest that years of experience increased EI. However, the level of EI was also associated with nursing ability, which in turn increases with time practicing in the profession (Nightingale et al. 2018). When this is considered alongside the evidence presented by radiographers in this study (section 9.2.1) who disclosed that caring for patients was a process developed by learning from one's own mistakes and the behaviour of others, it is argued that care giving ability is not a consequence of an individual's inherent level of EI alone. Behaviour and actions are instead learnt and developed through reflective practice in keeping with the constructivist and symbolic interactionist theories pertaining to reality (see Chapter 2). Clinical practice and patient centred care is instead managed as a process of bringing theory into practice and adjusting actions and reactions based on past experiences and interactions. EI is not entirely disregarded as a potentially influential character trait when the construct of care in CT is considered. However, the lack of robust evidence pertaining to the impact of EI on healthcare practice, and more significantly patient care, means that the theories cannot be accepted unquestioningly (Birks and Watt 2007). Therefore, until such time when more substantial data is available, interpretations remain consistent with the theory that care within CT is learnt and taught through exposure to clinical events and interactions as part of the professional group. These experiences are then processed cognitively on an

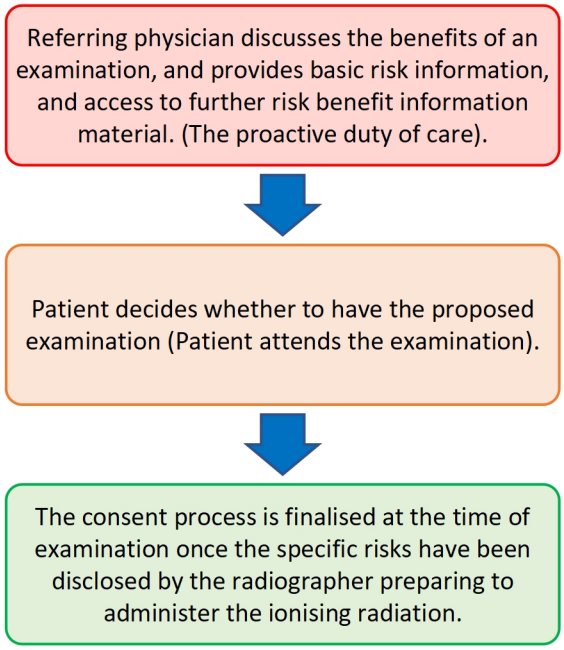
individual level to adjust and improve practice whilst developing a deeper understanding and empathy towards the patient and their needs.

8.9 Consent in Radiography

Haley and Watson (2016) identified in relation to informed consent, that radiographers varied in the way they perceived their role in providing information to the patient during a CT exam. Research by Ukkola et al (2016), also argued that patients obtain inadequate information regarding radiological examinations and that the information disclosed to them was ad hock and non-systematic. Ukkola et al (2016) conclude their study by recommending that a set of systematic practical guidelines should be issued to formalise the information giving process to achieve informed consent. However, a rigid approach to consent is not one supported by the SCoR (The Society and College of Radiographers 2018b). Consequentially a standardise approach to consent would result in the provision care which does not value the patient as an individual (Department of Health 2015a; Department of Health 2015b).

The SCoR are clear that consent processes need to be practicable (The Society and College of Radiographers 2018b; Younger et al. 2018b). Younger et.al (2018) argue that there is no one professional who is best placed to perform the risk benefit disclosure process for diagnostic imaging. As Nightingale et al (2012) comment, whilst the clinician is best placed to provide information on health conditions their knowledge of diagnostic imaging may be limited. One presented solution to this problem is the proposal of a shared model of informed consent (Younger et al. 2018a) (Figure 8.2).

Figure 8.2 Shared model of informed consent.



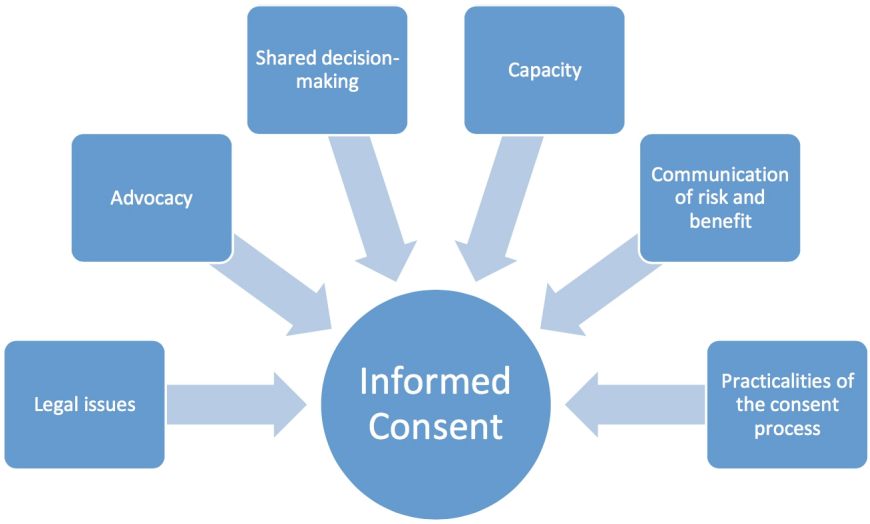
It is argued that the above model of consent is one which can be supported within the CT department. Data provided by the radiographer population would suggest that this is a model which is at present intermittently followed (Data box 8.9) It is however argued that caution should be taken when presuming that the referring clinician will have fulfilled the criteria detailed within the first step of the process (Figure 8.2).

Data box 8.9

Supporting Data
"In an ideal world when they go to in clinic or GP, I think that's the point of the initial consent because they're agreeing to have this examination done at that point, although when you get them in the room you go through everything and, **'any questions are you happy for me to continue?'** Then that is the point of consent there it's not, it's not full consent because we are not explaining, were not explaining the possible risks of radiation, the one in a million chance of dying from the contrast, that kind of thing. But it's like a presumed consent really." *Radiographer 2* "I think consent is really, obviously yes consent is the most important thing. So informed consent from the patient. Because you may well care for the patient, but they need to be informed to understand what's going on because, often they're not informed as to why they are having certain tests done, so actually informing them as to why. Informed consent is about saying to the patient you're about to have a scan and you make the assumption that, if the patient is an outpatient and they have arrived that's an assumption of some elements of informed consent, so why would they be there? And obviously when you get them into the room, you obviously do the relevant checks, date of birth blah blah blah blah, you tell them what they are having done and **you ask them is this okay?** this is what we are doing, and you make this, it's essentially a level of informed consent. Because if actually they agree to it then that's consent in a sense isn't it? I mean yeah for basic stuff before you start prodding them too much, yeah so by then participating its consent and ensuring that they are informed of what you are doing." *Radiographer 8* "So you can collect your patient from the waiting room introduce yourself so they know who they're dealing with, explain what you would like to do, and if there an inpatient I usually try to gain some kind of consent you know 'yes that's fine', so take them through some kind of consent to take them in the room basically. Outpatients are there because of chosen to be there for the scans as far as I'm concerned." *Radiographer 7*

NICE accredited (NICE 2018) clinical guidance published by The Society and College of Radiographers (2018) presents six key themes of informed consent which were identified during a systematic literature review. These are shown in Figure 8.3.

Figure 8.3 Themes identified from SCoR Literature review(The Society and College of Radiographers 2018b)



Whilst radiographers within my own study present themselves as being advocates for the patient, ensuring that they understand what is happening and providing the opportunity to ask questions relating to the scan, it is the communication of potential risk and benefit which is conspicuously absent from the disclosed data. The radiographers(Data box 8.9) were explicit in stating that they do not explain the risks of radiation (COMARE 2014) as per practice regulations (*Ionising Radiation (Medical Exposure) Regulations* 2017) and whilst the radiographers were clear to explain the process of contrast administration and the feelings the patients would experience, disclosure of the potential risks relating to the injection is noticeably absent.

In a study which explored the role of the radiographer in information giving prior to a CT scan, Hadley and Watson (2018) found that from a cross sectional survey of 78 UK CT radiographers, only 23.1% stated that they discussed the risks of radiation at least sometimes with the patient. The risks associated with iodinated contrast media were discussed more frequently (44.9% always, 28.2% sometimes) (Hadley and Watson 2016), however these figures are still relatively low. The longstanding debate regarding what information is appropriate to disclose to patients and how it should be disclosed (Hadley and Watson 2016) has become even more problematic

with the publication of IR(ME)R (2017) (*Ionising Radiation (Medical Exposure) Regulations* 2017). The SCoR have published guidance on communicating risk benefit information to patients (The Society and College of Radiographers 2019), which places focus around establishing locally agreed protocols to facilitate risk benefit disclosure. However, to date there is no nationally agreed guidance as to what exactly should be disclosed and how it should be disclosed to the patient population. The SCoR recognise that consent is a separate issue to that of disclosure of information under IR(ME)R (2017) legislation (*Ionising Radiation (Medical Exposure) Regulations* 2017). However, within the SCoR guidance on obtaining consent, there is now an expectation for radiographers to provide an explanation to their patients regarding the radiation doses they receive (The Society and College of Radiographers 2018b).

The information perceived to be required by individual patients may be dependent upon how they present themselves and any fears or worries they may have relating to their own health (Mathers et al. 2011; Carlsson and Carlsson 2013). Unfortunately, the SCoR (2018b) clinical guideline does not consider patient perspective or wishes on what information they would like to receive as no published data to support inclusion of this information was identified during the SCoR (2018b) review process. An American study published by Thornton et (2015) found that regardless of the information patients received about radiation doses and risks, participants expressed a gratitude for the examination, preferring to receive a radiation dose in preference to exploratory surgery. This mirrors a concept identified within data presented by Patient 6 (Data box 8.10).

Data box 8.10

Supporting Data
"To me, you could tell me how good or how bad it was, but at the end of the day I would want it done no matter what. I need to know where I am, I'm not interested in [pause] I don't know. I'm not really worried about it, if you know what I mean? Because it's part of it and you know, if I'm worried about having that done, would I then be worried about having the chemo tablets and things like that? Having it done and needing it to be done outweighs it all. It's a bit like having radiotherapy. You'll sit there and they'll say right you know, when I had it the first time and it was on my breast, it was like 'we might catch your lung, we might do this, we might do that', but you don't think 'oh well I'm not gonna have it done then!' you just think 'just go for it!'" *Patient 6*

Patient participants within the Thornton et al (2015) study also disclosed the desire to have more information from the referring clinicians relating to the rationale for specific imaging investigations, intervals of follow-up imaging, and testing alternatives. Concerns were raised by the participants within the study (Thornton et al. 2015) that if discussions were not initiated by the patient, they would not occur at all. These concerns were also expressed by patient 5 who stated that she felt the information she needed was there, but she never felt as though she had been given the whole picture regarding her overall condition and treatment plan (Data box 8.11).

Data box 8.11

Supporting Data
"I think for a lot of people in all departments, not just your department, there is a sort of a feeling that you will only get the information out that you ask for. It's almost like you come away always feeling slightly like, I haven't got time to sit and talk to you about your particular issue too much because there is a lot of people to be seen. You sometimes feel as though you've got to draw out what you want from them *[referring clinicians]*, and I know some people probably wouldn't worry about that, but there are a lot of people like me that would just like to be given more information spontaneously without asking. Because I'm sure that there is a feeling that you only give what the patient, what's asked for, you'll answer a question, obviously if I said you know a specific question, it would get answered, but there's no help with the, the giving the complete picture sort of thing. There's very much the sort of feeling that the information is there it's there to hold onto and you can have a bit of it if you want." *Radiographer 5*

The statement included in Data box 8.11 raises concerns regarding an imbalance of power between the patient and the professional. However, in

the context of this conversation there was no specific reference made to radiographers and their behaviour during a CT scan. Again, this data highlights the lack of information being provided to the patient prior to the scan which must therefore impact upon the patient's ability to give true informed consent.

The SCoR guidance states that consent can be: verbal, in writing or implied (The Society and College of Radiographers 2018b: 4). However, data collected within this study indicates that it is the interpretation of the term 'implied' which has the most influence over the radiographers' construction of consent, and therefore care, during a diagnostic CT examination. As implied consent is termed as non-verbal conduct or body language which indicates a person is giving consent (Dimond 2008), in the context of the outpatient CT examination, radiographers interpret voluntary attendance at the appointment as being an act of consent (Data box 8.9). However this is contested within the SCoR clinical guideline (The Society and College of Radiographers 2018b) (Data box 8.12).

Data box 8.12

Supporting Data
"Healthcare practitioners should not assume that patients and service users attending a department for a diagnostic procedure or radiotherapy treatment have fully understood the information given to them and have thereby given true informed consent, because they are often unaware of the exact nature of the procedure which they will undergo." *(The Society and College of Radiographers 2018b: 1)*

One of the conflicts exposed by the radiographer data collected within my own study was that whilst assuming patient attendance constituted consent, many radiographers were acutely aware that patients arrived at the CT department with little or no understanding as to why they were there. A significant problem also identified by Nightingale et al (2012) who also found that patients were provided with 'woolly' descriptions of SPECT-CT examinations by referring clinicians which resulted in increased anxiety and

inaccurate constructions of what the examination would entail prior to the appointment. As the radiographer is ultimately responsible for ensuring the patient is genuinely consenting to the procedure, reinforcing the knowledge that it is they who will be held responsible in law if this is later challenged (The Society and College of Radiographers 2018b: 1) may inspire them to think more carefully about presuming that those who attend for an appointment are fully informed about the procedure and therefore able to give informed consent via their actions alone. Importantly, radiographers within my own study did not view consent as an objective process and presented themselves as responding to the communication and information needs of the individual patient. They also disclosed that they practice in a courteous manner by providing the patient with the opportunity to ask questions and seek verbal permission to proceed with the examinations (Data box 8.9), behaviours in keeping with SCoR clinical guidance (The Society and College of Radiographers 2018b).

Whilst this study evaluating the construction of care in CT has touched upon the subject of consent in the context of the CT examination, patient specific data relating to the type and level of information they require is limited and therefore, in keeping with the SCoR research recommendations (The Society and College of Radiographers 2018b), it is agreed that further, more specific research is required in this area. It is also suggested that further research relating to practice and the implementation of the IR(ME)R 2017 legislation (*Ionising Radiation (Medical Exposure) Regulations* 2017) would be advantageous to ensure that practice remains equitable with the NHS England demographic and to enable best practice to be understood and disseminated across the country (Challen et al. 2018).

8.10 Summary of the Review

Whilst aiming to make explicit the additional knowledge and data taken from literature sources and used to elaborate validate and contest the varying lines of questioning exposed during the constant comparative analysis and grounded theory generation, this chapter has also explored the theory and ethic of care in relation to healthcare practice. It has identified that whilst authors agree that the provision of care must, on some level, involve actions to meet need (Noddings 1986; Fisher and Tronto 1990; Tronto 1993; Bubeck 1995; Held 2006; Tronto 2013; Tronto 2015), it has also highlighted the importance of undertaking appropriate and required actions when aiming to meet the needs of others. The review has also exposed a need for radiography training to include elements of EoLC (White 2017) and advanced communication education (Mathers et al. 2013) to enhance patient experience and radiographer care delivery.

This thesis will now present the resultant constructed grounded theory which has been built via the interpretation of participant data and which has been questioned, validated against and supported by the additional literature included within this chapter.

Chapter 9: **The Grounded Theory – Dynamic Assessment and Reaction to Need.**

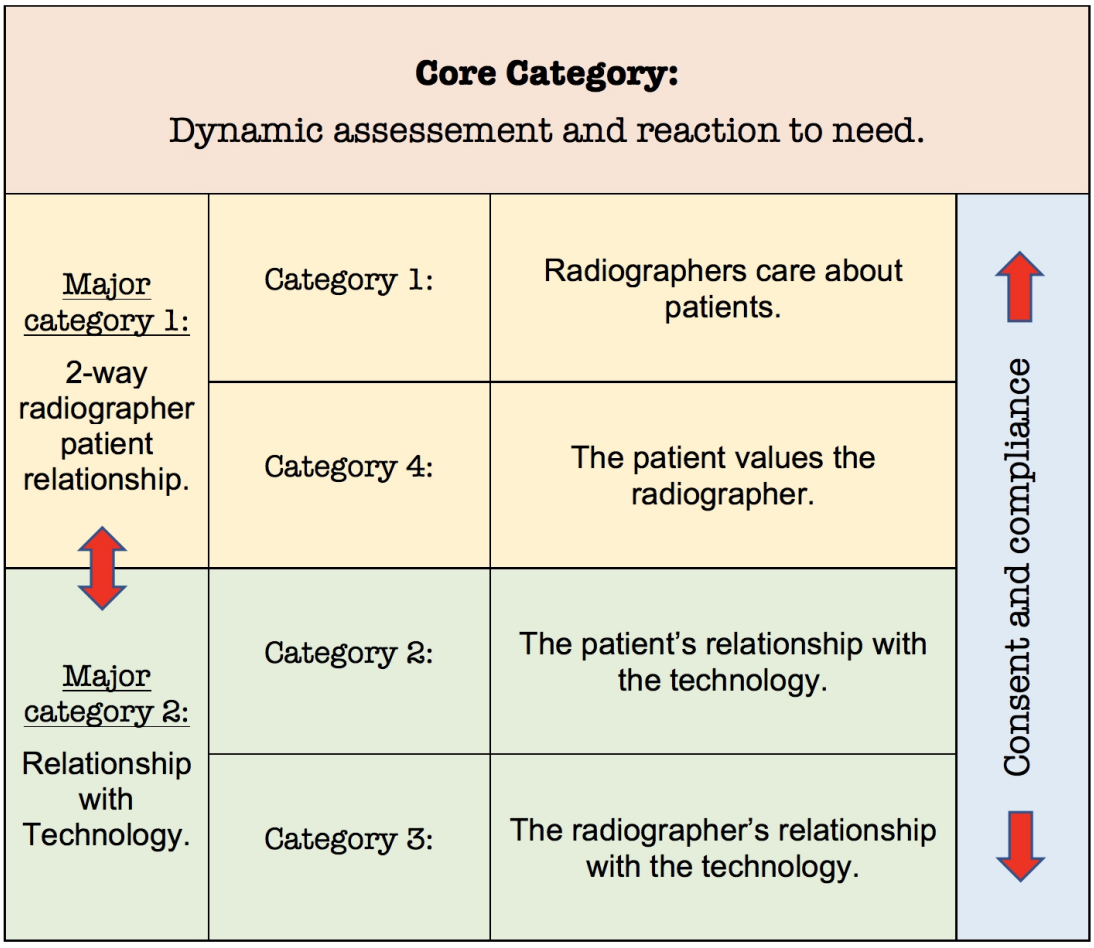
Within the preceding chapters of this thesis the process of theory development has been described in terms of concept and category development and integration. Throughout the journey towards grounded theory development, existing literature and additional knowledge has been brought into the elaboration of the major categories to ensure that the resultant theories presented in this chapter are contextually relevant and underpinned by both theoretical concepts and empirical evidence.

9.1 Introducing the Grounded Theory.

In the context of this study, the term *grounded theory* denotes a set of well-developed categories that have been systematically constructed, in terms of their properties and dimensions, and interrelated, through their relationship to each other to form a theoretical framework to explain the construction of care within the CT clinical environment (Corbin and Strauss 2015: 62). The cohesiveness of the theory is dependent upon the designation of a final, truly abstract, core category which summarises the theory around which all other categories and concepts are integrated (Corbin and Strauss 2015: 62). The overarching core category integrating the concepts, categories and major categories presented in Chapters 6 and 7 is:

Dynamic assessment and reaction to need (Figure 9.1).

Figure 9.1 The core category.

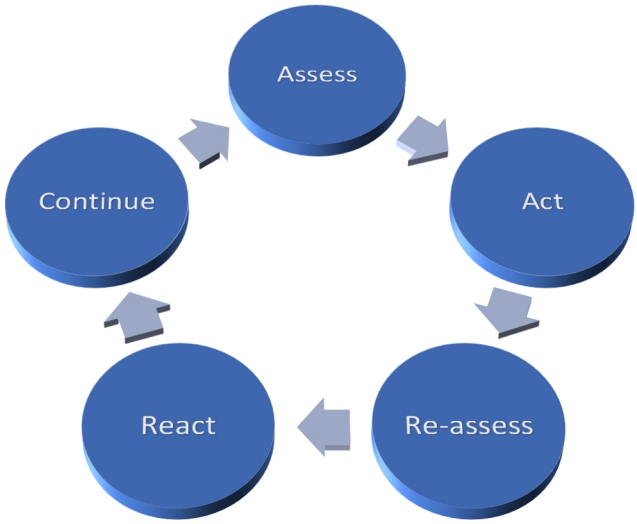


9.2 The Grounded Theory

9.2.1 Core Category: Dynamic Assessment and Reaction to Need

Care within CT is constructed as a dynamic cycle of recognising and reacting appropriately to the individual needs of each patient for whom the radiographer has assumed responsibility for at a specific point in the patients' healthcare journey (Tronto 2015: 6) (Figure 9.2).

Figure 9.2 Continued, dynamic assessment and reaction to need during a CT examination.



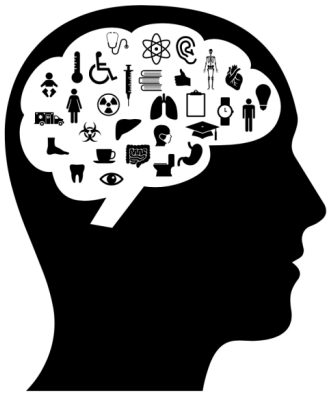
In order to fulfil a successful diagnostic CT examination and to gain the trust and confidence of the patient, radiographers perform continuous and interactive assessments of the four categories of need and adapt their behaviour accordingly. This ensures that the task of generating diagnostic images as efficiently and effectively as possible is achieved, all whilst respecting the needs and preferences of each individual patient as part of a patient focused model of care.

In keeping with the interpretations of Lundvall et al (2014) the model (Figure 9.2) is validated by the radiographers (Data box 9.1) as being a cognitive problem solving process which draws upon taught elements of knowledge such as scanning techniques, fused with learnt holistic skills which are developed through exposure to varied and challenging situations (Tronto 2015: 7 & 30) as the radiographers' career progresses (Figure 9.3).

Data box 9.1

Supporting Data
"It's mostly experience, seeing what was done before and yeah basically mostly its experience." *Radiographer 2* "It's that, plus pulling together everything you see every day and after every day you're probably little bit better at it when you come back the next day." *Radiographer 5* "You might be doing something that no one has done for ages, but you have to remember how to do that and yeah it's a never-ending, you know kind of learning thing isn't it when you're working." *Radiographer 5*

Figure 9.3 Providing care during a CT examination is a problem-solving, cognitive process



Radiographer data substantiates the theory that a diagnostic examination is a truly cognitive process where during any single examination a radiographer will need to make decisions and call upon a "library of knowledge" *(radiographer 5)* relating to a plethora of physical emotional and examination related needs in order to achieve a successful diagnostic scan.

Whilst the guidance documentation as discussed in Chapter 3 has been criticised for lacking in application to the CT clinical environment (National Institute for Health and Clinical Excellence 2012), profession specific guidance does recognise the significance of logical problem solving in practice (Data box 9.2).

Data box 9.2

Supporting Data
'Be able to demonstrate a logical and systematic approach to problem solving.' *(HCPC 2013: 15)*

However, whilst this guidance (Data box 9.2) recognises these skills as being essential in the identification of a proficient radiographer (HCPC 2013), more emphasis needs to be placed on their significance in providing patient centred care as well as being an attribute needed to achieve a task.

The behaviours disclosed by radiographers to support the construction of the core category were interpreted as being reflective. Radiographers disclosed reflective events when revealing how they had developed the skills needed to make rapid assessments and behavioural adjustments. The radiographers were also very open about 'not always getting it right' (Data box 9.3). This interpretation is supported by Tronto's theories which argue that care stretches beyond an intuitive emotion into a context specific practice which

develops over time (Tronto 2015: 7 & 30). It is these context specific activities which link back to the arguments presented in chapter 3 and support the preliminary interpretation that generic practice guidance such as guideline 138 (National Institute for Health and Clinical Excellence 2012) fails to consider contextual environmental factors when defining what quality care experiences should be.

Data box 9.3

Supporting Data
“My natural instinct is always to make a joke of things because I always try and lighten the mood. But you do learn actually I probably shouldn't have tried to joke with that patient and then you learn for the next time” *Radiographer 2* “Sometimes I'm wrong. I mean sometimes I'm, I'm certainly not always right. So, it is difficult, it is difficult to, assume things, but you have to….If you say something and you think "oh that didn't go down too well" then you might try something else (laughing)” *Radiographer 6* “It's difficult isn't it because you don't, you get a very short amount of time to make your decision as to how you are going to approach someone. I mean as I said the more you do it the more, the better you get at it, but I mean sometimes maybe your initial judgement might be wrong, you might start off thinking, start off and then think oh actually I need to change my approach completely.” *Radiographer 5*

Radiographers identify that human, and therefore patient, behaviour is not static or predicable and as a result, professional guidance on achieving optimal patient experience within a relatively short single interaction must take this into consideration. Within chapter 3, concerns were identified with regards to practice guidance (National Institute for Health and Clinical Excellence 2012) directing professionals away from making judgments about a patient based on first impressions. However, radiographers disclosed positive consequences of being able to make swift judgments about a person and their needs based on first impression and that the ability to do this is paramount to a successful examination (Data box 9.4).

Data box 9.4

Supporting Data
“Like some people you can judge you can have a bit of a laugh and a joke with and some people you can't. You can just tell from the body language and they’re just the way they are and again that comes with experience.” *Radiographer 2* “Well you can only really see that when they come in. You kind of gauge I think.” *Radiographer 4* “You know you can usually tell can't you. As soon as you say hello to someone you can see if they are going to be, if they’re frosty, if they're happy, or if they even, if they’ve had it before. You get those vibes off of people, don’t you? And that’s what you have to react to I think, when you get them on the scanner.” *Radiographer 4* “So some people you can assume they need more assistance or care than others i.e. the patients who come in a bed and look particularly moribund i.e. they’re in the fetal position. You tend to know that they’re going to need a lot more manual handling and assistance from you so that's how you [pause]. It's just when you've done it for like over a quarter of a century you sort of get to know. It's just by experience, you know who will need assistance when, how and where generally and you should never assume that someone, because they’re in a wheelchair, they need your assistance. They don't always want or need your assistance so yeah it just happens, you just know. Just being sensible really.” *Radiographer 8*

This is significant primary data which again validates the argument that guidance (National Institute for Health and Clinical Excellence 2012) fails to consider the situational differences of the CT clinical environment, an argument which may also be considered applicable to other high technology clinical environments where single, transient (Strudwick et al. 2011) patient professional interactions are common. What must be clarified is that radiographers do not ‘judge’ the patient per-se. Instead I would argue that in practice radiographers perform a dynamic evaluation of the patient based on their initial interaction and then adjust their behavior and further interactions accordingly. Data supplied by Lundvall et al. (2014) supports this interpretation by identifying behaviors used by radiographers to judge, predict and react to a patient’s underlying pathologies based on presentation alone. Radiographers were shown to apply each judgment to their choice of patient positioning during radiography examinations. These judgments and actions enabled the radiographer to achieve diagnostic images whilst meeting the individual needs of the patient and to facilitate an accurate diagnosis

(Lundvall et al. 2014). Within the context of any radiography examination, I would therefore argue that it is the skill of being able to adjust behavior and practice accordingly, once an initial judgment has been made, which is significant to achieving a diagnostic examination individualised to the needs of the patient.

When considered alongside the knowledge extracted from literary sources (Fisher and Tronto 1990; Tronto 1993; Held 2006: 10), it is suggested that whilst care within this study is discussed and understood in terms of meeting another person's need (Fisher and Tronto 1990; Tronto 1993; Held 2006: 10), within the specific context of the CT clinical environment, the actions of the radiographer must go beyond the mere assessment of, and reaction to, need and include a temporal or time based dimension. The significance of this does not appear to be recognised within existing literature and is instead dismissed as rushing and non-patient centred (Mathers et al. 2011; Hayre et al. 2016). As discussed, the actions deployed by the radiographer within CT when providing care are dynamic, reactive and responsive due to the relatively short patient interaction and the requirement to achieved diagnostic information within an allotted time frame (Carlsson and Carlsson 2013; Lundvall et al. 2014). This co-constructed model of care encompasses the simultaneous assessment of patient needs against the technical requirements of the examination (section 7.3 Figure 7.2), behaviours which align with identified processes reported by Lundvall et al (2014). However, ensuring a high quality care experience means that these actions and behaviours must be executed whilst maintaining a courteous, professional relationship with the patient.

9.2.2 The Significance of the Radiographer Patient Relationship.

Hayre et al. (2016) suggest that the radiographer patient relationship is in danger of being lost to the emergence of an 'in-out' culture, placing speed of examination above the desire to provide a compassionate service which meets the needs of the patient. Whilst the catalyst to these interpretations is presented as the emergence and prevalence of direct digital radiography

(DDR), it can be argued that plain film radiography has always had the potential to resemble a production line as many examinations involve a limited or single image acquisition. Whist participants within the Hayre et al (2106) study justify the notion that DDR has reduced the time spent with the patient due the redundancy of film processing, it must not be forgotten that traditionally, during the processing phase of the examination, the patient was either left to wait within the examination room alone, or asked to return to the waiting area so that the room could be utilised by another radiographer. In reality, the actual time spent with the patient may be no different. I would therefore argue, in line with the evidence presented during theory construction (Section 6.4.3 Table 6.9), that it is the way in which the interactions occur, no matter how fleeting they are, that actually signifies how patient focused the overall examination becomes. Andersson et al (2008) strengthens this hypothesis by arguing that it is the way specific elements of an examination are executed that contributes to the success or hinderance of a caring examination. Contrary to the interpretations of Hayre et al (2016), Andersson et. al (2008) present and consider the examination in its entirety when evaluating the care giving process and not just the in-room image production element. Whilst specific imaging modalities were not disclosed within the Andersson et al (2008) study, the data accounts used to support interpretations would suggest that both plain film and cross-sectional imaging (CT and/or MRI) were practiced by the participants within the study.

It must be remembered that knowledge of the patient demographic, condition, examination and overall socio-psychological condition may be limited or unknown to the radiographer prior to meeting the patient for the first time (Lundvall et al. 2015; The Society and College of Radiographers 2017). Whilst this lack of information can be used positively as a means to engage with the patient as part of a relationship building process (Lundén et al. 2012), it is also widely accepted that patients themselves may be unaware of the potential diagnosis which they face (The Society and College of Radiographers 2017). An argument supported by the work of Reeves and Decker (2012) is that the significance of the communication skills needed to manage such encounters and situations are, in practice, taken for granted

and their value to the success of an examination underestimated by those working outside of the clinical imaging environment (Reeves and Decker 2012).

The role of the radiographer in providing support and guidance to the patient as part of a holistic, patient focused experience is reported within existing literature (Andersson et al. 2008; Munn et al. 2014; Lundvall et al. 2015). Whilst Andersson et al (2008) identify the concept of 'guiding the patient' to be inclusive of providing the patient with adequate information, the authors also identified additional roles such as counselling. These were also interpreted within my own analysis as skills which take the radiographer beyond that of a robotic button pusher (section 6.4.1.2) into being a provider of compassionate patient focused care as the execution of each of the additional roles is dependent upon the specific needs of the patient and the individual situations they face (Andersson et al. 2008). Munn et al (2014) argue that supportive human interactions are paramount to a successful examination as patients rely on staff to provide adequate support and communication to enable them to make it through diagnostic examinations. Munn et al (2014) also directly supports the concept that radiographers do not just care *for* patients, but care *about* patients (section 6.4.1) by identifying that radiographers disclose a fierce interest in their patient's wellbeing. This was demonstrated by the desire radiographers share with the patients to achieve a diagnostic scan which will aid diagnosis and facilitate treatment to benefit the patient (Munn et al. 2014). This interpretation is directly reflected in the data provided by radiographers within this study (section 6.4.1.3 Data box 6.6).

Whilst many of the theories pertaining to the presence of inherent levels of EI amongst certain healthcare professional groups remains unsubstantiated within the reviewed evidence (section 8.8), it is proposed that the continued dynamic and fluid assessments identified, together with the awareness that patient behavior can be affected by many unseen circumstances and external factors (Section 7.2 Data box 7.3) confirms that radiographers demonstrate a high level of emotional intelligence relating to behavior and

self-awareness (Mackay et al. 2012; Mackay et al. 2013; Mackay Stuart et al. 2015). Evidence presented within this study would however support the argument that EI, as an individual's ability to care, is a character trait which can be learnt and developed through experience within a specific caring environment (Tronto 2015: 7 & 30).

9.2.2.1 Relationship vs Partnership

Whilst radiographers may strive to offer all aspects of support to CT patients during the examination, it is the radiographer alone who is responsible for, and able to operate, the technology during the examination (Ahonen 2008; Lundvall et al. 2014). In keeping with the interpretations of Tronto (2015:9) this role is therefore considered to hold dominance during the examination. This means that whilst a two-way respectful relationship has been identified as being significant to the construction of care within CT, this relationship cannot be considered a true and equal partnership as directed by the SCoR (The Society and College of Radiographers 2013; Itri 2015; The Society and College of Radiographers 2018c; The Society and College of Radiographers 2018b). Within the specific context of the CT examination, it is argued that this should not be viewed negatively. Data presented by the patient population identifies that patients actively put themselves in the hands of the radiographer to enable them to achieve the end result of producing diagnostic images (Data box 9.5). However, this can only be achieved by radiographers who work confidently and instil trust through appropriate and courteous communication (Carlsson and Carlsson 2013; Nightingale et al. 2017) whilst demonstrating competent operation of the equipment within the clinical environment. Carlsson and Carlsson (2013) state that a trustful dialogue with the radiographer is crucial to the patient's ability to manage fear, discomfort and feelings of loss of control. Although this statement (Carlsson and Carlsson 2013) relates specifically to an MRI patient population, data collected from both the CT research participants in this study and Carlsson and Carlsson's (2013) work supports the argument as being applicable to the wider diagnostic setting. Data disclosures from the patient population (Table 9.1) validates the argument that when 2-way

respect is lost through poor communication and equipment operation, trust is lost, and the perception of the quality of care being provided is reduced.

Data box 9.5

Supporting Data
“She was really very calm and very kind yeah, she really helped, you know make me understand, get me to do, you know what would help. So yeah, I knew what they wanted me to do, so I did my best to, you know, accomplish that. You're in their hands and you trust them, and you know, you just try to make their job as easy as possible. Obviously for your benefit” *Patient 2* “I mean you go in for the scan, they know what the scanner is supposed to be doing. They look after you. They tell you what's going on and all that. You're not umm, they tell you how to breathe in and what not. I just listen to what they say and do what they say. Yes because it's for my benefit isn't it?” *Patient 3* “I think I put myself in the hands of the radiographer, because I try to be as efficient as possible, you know if she wants me to take my shoes off and lie on the bed then you try to do that as soon as you can. You know because you know that she has a job to do or he has got a job to do. And I think most people are wanting to be prompt and efficient, so you don't want to waste their time, but you want to be sort of compliant I suppose.” *Patient 5*

Table 9.1 When respect is lost (The patient perspective)

Supporting data	Participant	Memo notes
"I find a difference between going into the hospital and going into the mobile, in the sense that the hospital ones you've got like someone doing your arm and there's a nurse with you *[more likely an RDA/radiographer as nurses do not work in the rooms at this site]* more likely whereas like sometimes in the mobile one there's only like a nurse [*Radiographer, mobile units onsite do not have nurses*] in there. Sometimes they're all right and sometimes there not as friendly as the ones in here, you know in the hospital. I would say in the hospital one, they've got more time for you and they're, I can't, *[loses words due to brain tumour]* nicer in a way, you know what I mean? And more patient friendly. But sometimes you feel in the mobile that they just want to get you in and get you out. Sometimes they can be a bit frosty."	Patient 6	Patient 6 did not like going onto the mobile unit because she felt rushed. The staff were not as friendly, and the relationship was not one of mutual respect. Whist she still completed the scan the quality of care she received was from her perspective not as good and the trust she has in the staff to perform the job correctly in relation to her cannulations has been lost. The patient now attends the oncology department for cannulation first.
"I suppose the thing I didn't know was how long it was going to take. I could have been going through there for half an hour and I had no idea. And I was quite surprised when it did happen, how quickly when I think back how quickly it was. And perhaps if they'd just literally said its to be 10 minutes, that would have been better to know that. But they were quite informative. The only thing that, that they didn't say was that for the during of the scan I'd have to put my arms above my head which is quite difficult if you've got arthritis. Because, in your shoulders you can't necessarily put your arms up above your head. So that was I think the thing they didn't tell me." **Later in the interview when discussing why having the tube round her finger had been so memorable to her the patient stated:** "I felt responsible for it and I just thought it just seemed a bit sort of amateurish, yes it felt a bit Heath Robinson and I just thought there should be a better way to do this. Especially when you then have to put your arms up. You know it's coming with you, but you then feel even more responsible because you can't see it, but it is still wrapped around your finger or your thumb. But it's all these little things you remember when you're having it done you know. This piece of equipment it is worth millions of pounds and there they are wrapping it [the injector tubing] around my finger."	Patient 1	Good communication is lacking. The patient experience for this exam was not ideal. She has had scans since and had better experiences making this one stands out. During this examination the patient experienced an extraversion and via the actions of the staff the patient lost trust in them and interpreted their behaviour as panic (see additional memo * P239). The coiling of the tubing around the patients' finger is done to prevent the line from pulling from the patients' arm during the scan. However, the patients' interpretation of this simple yet effective action was one of being substandard and unprofessional. This action not only made the patient feel responsible for the tube but also made the patient less trusting of what was happening.

Table 9.1 (continued) When respect is lost (The patient perspective)

Supporting data	Participant	Memo notes
"Suddenly I thought oh my goodness I've got this terrible pain and as I went to say excuse me or stop and they suddenly said, 'stop stop!' and the scan stopped. And the injection hadn't gone in the right place and then there was, there seemed to be a sense of panic that's all I can say. I was laying there with this arm that was very painful and suddenly I was surrounded by the young nurse who was in A&E who put the cannula in, the two radiographers and there was panic. They were feeling my arm, I think I remember one of them saying 'the whole 80mls has gone into her arm.' And then they said don't worry but they, ***they*** *[put emphasis on they]* looked very panicky. Instead of them saying, 'the injections gone into the wrong part, it's gone in to your soft tissue,' which I think they did eventually say. But the moment of the panic when they were all panicking, and they didn't explain, if they'd have said it's gone into your soft tissue, I have to deal with this, it's not gonna be a long-term problem. But I was just lying there thinking oh my god what's can happening to my arm? what's happening to my arm? *[quite jovial about it but she has stated she deals with stressful situations with humour].* Eventually the young nurse who had been in A&E with me she came in and she massaged my arm and she said we need some ice packs and then they bought in a doctor and he looked at my arm very seriously. And I thought oh this is serious and then it suddenly all seemed to pass. I had a nurse who was massaging my arm and my arm was huge and very hot and hard and ice packs. *[The nurse is coming across as the one who is actually doing the caring in this situation]*. And then obviously then we [inclusive part of it], then had to start all over again. So then they decided they try and find a vein in my other arm, which they couldn't find in the crease *[pointing to ACF]* so they decided to try and find one in my wrist area, so they **slapped** *[emphasised]* my wrist area violently until, it was actually, that was far more painful than the right arm *[more painful than the extravasation]* and eventually they got a cannula in and repeated the whole process and then of course I was laying there thinking I hope this doesn't happen again but it didn't. It was fine."	Patient 1	* The quest to be efficient and to get the patient scanned quickly after the extravasation had a detrimental impact on the patient and was interpreted as panic. The patient was again ill informed, and this effected the trust she had in the radiographers when she returned for a follow up scan. However, the actions and behaviour of the radiographers during the proceeding scan was different (more informative, calmer and professional in her opinion) and her trust was reinstated and experience much better. Radiographers talked about the patient and not to the patient and the 2-way respect was lost.

Table 9.1 (continued) When respect is lost (The patient perspective)

Supporting data	Participant	Memo notes
"This particular woman, who was a physiotherapist, spent the whole time talking about herself. You know and her husband and this that and the other and wanted to get me out of bed and moving while she was talking about herself. Which is fine but, I kept trying to tell her that I was not feeling brilliant and I had a very bad reaction to anesthetic and they tried everything you know, and they gave me all the drugs to stop me from being sick and, and I told her that. But she was 'oh come along Deary, you'll be fine' sort of thing. ***She wasn't listening*** (emphasised wasn't listening) to me. Umm and not looking at me, not doing her job really. And of course, by the time I got through to her, I was sick everywhere and I knew it. And I thought that could have been avoided because you weren't focused on what was happening. I mean I didn't mind her chatting and being pleasant. But not, not at that point, that was the bit of the job that she should have understood that there was a problem. I like people to be personal and chatty and whatever but no she didn't engage you know. And you see I remember that still and that was one aspect of the care which wasn't an important aspect because it was only getting me mobile, but it stuck out and if you had a bad experience with a CT scan or something it would stick out. Whereas if all the care is good or more than good, then it sort of, it leaves that better feeling.	Patient 5	Although this interaction was with a physiotherapist it demonstrates that when the professional communicates inappropriately the patient reals a lack of respect and caring toward themselves and loses the respect for the professional. Patronising and disrespectful. Did not assess and react to the patients' actual needs. Did not listen or pick up cues. Patient lost her dignity unnecessarily. Bad experiences stick and effect you more.

When this argument is considered alongside evidence presented in chapter 3 the data provides an explanation as to why *The NHS Constitution* (Department of Health 2015b) together with the professional guidance documentation (HCPC 2013; The Society and College of Radiographers 2013; HCPC 2016) are so dictatorial when defining that staff 'must' and 'have a duty' to respect and not discriminate against patients (Section 3.5.2.4 Data box 3.13). When read in isolation as a practicing radiographer, the policy drivers within the discourse were interpreted as being aggressive and inequitable to the staff audience. However, when revisited in terms of the process of care the discourse represents, it becomes apparent that if the radiographer fails to show compassion, respect the patient and or communicate effectively, the shared goal of the diagnostic examination may not be achieved. It is imperative for the radiographer therefore to remain respectful and courteous however, if the patient fails to deploy the same behaviours, the examination will still be achieved although the indications are that the examination will be less patient centred and more task driven (section 7.2 Data box 7.2). This is a behaviour pattern reported by Strudwick (2016) and supports the interpretation that the 2-way mutually respectful relationship serves to motivate the radiographers to provide patient focused care. It is these actions and experiences which in turn promote positivity and well-being amongst the radiographer group and perpetuates the positive working environments championed by *The NHS Constitution* (Section 3.5 Figure 3.5).

9.2.3 The Significance of the Relationship with Technology

It is argued that what holds together the co-constructed model of care first presented in Chapter 7 (Section 7.3 Figure 7.2) is the technology and the desire to achieve the shared goal of the production of accurate diagnostic images. There is not only a need but a desire, expressed by both the patient and the radiographers, to interact with the equipment and each other to produce technically accurate diagnostic information to answer the

clinical questions and provide reassurance to the patient (Nightingale et al. 2012).

The execution of technical procedures in the context of CT scanning are a fundamental part of patient care not something that is done alongside patient care as identified by Ahonen (2008). A successful diagnostic examination cannot be achieved through communication and trust building alone (Munn et al. 2014). The technical skills and competence displayed by radiographers are considered paramount to the success of any examination, especially with patients who may have complex care needs. This is supported by Munn et al (2014) who found radiographers use their technical knowledge and competent interactions with the technology to adjust scan times to enable claustrophobic and anxious patients to be imaged quicker (Munn et al. 2014). Whilst the result gave an inevitable trade-off of reducing image quality as a consequence of reducing scan time, radiographers used experience and professional judgements to ensure that some diagnostic data was obtained rather than simply abandoning the examination altogether (Munn et al. 2014). Although defined by the HCPC as being a technical competence (Data box 9.6), Munn et al's (2014) constructions provide evidence to support the theory construction that care within CT is a technological, yet patient centred model of care as initially shown chapter 7 (Section 7.3 Figure 7.2)

Data box 9.6

Supporting Data
'understand the requirement to adapt practice to meet the needs of different groups and individuals' *(HCPC 2013: 8)*

Significant to note is that technical processes as identified by Andersson et al (2008) are defined by the authors (Andersson et al. 2008) as being symbolic to good nursing care. This suggests that the models of care identified by radiographers are in keeping with compassionate care ideals

(The Department of Health 2012) championed within nursing practice. Whilst Andersson et al's (2008) work was conducted in Scandinavia where some of the professionals within the study were nurses trained in imaging techniques and practice, empirical data collected directly from CT patients (Data box 9.7) in this study confirms that the care provided by radiographers within the UK is consummate to the nursing models of care understood in terms of the 6C's (The Department of Health 2012).

Data box 9.7

Supporting Data
"I think whatever type of scan or whatever treatment you have to be made to feel that you are very well informed of exactly what is going to be done to you. And that you can you can ask any question and not thought to be silly and that they can have the time to explain to you." *Patient 1* "I think because they were quite kind and quite helpful in making sure that I was comfortable and you know doing all the things to make you put at ease yeah but if that hadn't happened you know if she hadn't have put that thing under my knees, realised I was uncomfortable and if she had never offered the blanket because it was cold, all of those things would have yeah, if I'd have been rushed definitely I couldn't have coped with that as well as I did." *Patient 2* "well the last time I was in there this one a few weeks ago that was bloody marvelous. Absolutely. It was a young bloke in there and that, and he, and you know, they ask you your name and date of birth and check who you are. But he was so explanatory, I mean I knew what was going on, but you let them go through it and all that, and they say 'oh, have you had this before and have you had that before? and this is that this and we shall put the um contrast? in. They stick it in your arm and it makes your bum go all warm [laughing]. But you know that was all absolutely fine. And they say breath in and hold your breath, and all that yeah. I can't fault that one bit." *Patient 3* "They are busy people and when you're going along at a certain time to be slotted into the schedule and you're treated with respect and whatever they, you know they give you time to readjust your clothing and you know. You know, I have, everybody has experienced things in their time when you sort of thought "humm" you know? that sort of thing, but none of that at all everything is absolutely fine." "I mean it would be reassuring advice, that they would be looked after and told exactly what was going to happen. Which has always happened with me you know, they have always said you know exactly whether there's gonna be a noise or sensation or discomfort. You have always been forewarned about that. That you would be collected and sort of taken back and you wouldn't be left wondering about anything." *Patient 5* "I mean being in the hospital side that was nice because they were you know is really looking after me and the woman who was in there the nurse *[would have been radiographer]* she was sort of holding my hand being supportive and saying you know sorry we are sorry and things like that." *Patient 6*

Data presented in section 6.4.2 constructs the CT examination as being more than a small part of a wider process. Patients assign significant meaning to the examination, where the acceptance of discomfort, anxiety and even pain in the short term is outweighed by the gains the CT exanimation offers (Data box 9.8).

Data box 9.8

Supporting Data
“Although the injections are sometimes incredibly painful, you grit your teeth and get on with it really. It's something that you’re sort of pleased you're having done because it, obviously the doctor had certain things in mind about what he thought it might be. It's like blood tests you know but you've got to have them done because it will give the doctor information he otherwise wouldn't have.” *Patient 3*

As identified by Nightingale et al (2012), whilst patients were often fearful of the examination results, they would prefer to know the prognosis rather than be left in ignorance (Nightingale et al. 2012). Building on this I would argue that a patient will not tolerate pain and discomfort unless they value the examination as having a significant purpose. Data supplied by patient 6 (Section 6.4.4.3 Data box 6.20) demonstrated the value of tangible images to the patient. But it was also identified that the patients value the radiographer’s role in producing the images as they, and the CT examination, are valued as a conduit to decision making (Section 6.4.4 Table 6.8) and therefore the patient’s future.

Whilst patients express their desire to actively comply during the examination (Data box 9.5), this scenario can only be achieved if the radiographer builds a respectful and trusting relationship with the patient (Carlsson and Carlsson 2013; Nightingale et al. 2017). Concerns were highlighted within chapter 3 that the evidence presented created unrealistic models of care reliant on taking time to build a relationship. This was something previously thought to be the reserve of healthcare staff who have multiple and\or extended interactions with patients and their

carers. However, on reflection, I would argue against this prior assumption. Radiographers openly talked of building relationships in short periods of time and valued these interactions and skills as not only benefiting the patient, but increasing their own job satisfaction and feelings of well-being (Section 7.2 Data box 7.1). Within the CT clinical environment, relationship building is present but contextually and situationally different to that experienced in ward or consultation areas. Nursing evidence values the benefits of the one to one interaction diagnostic environments facilitate (Lundén et al. 2012) arguing that the more intimate encounter encourages conversation and trust building to flourish (Lundén et al. 2012). The establishment of trusting relationships is, of course, contextually specific and this is validated by the nursing literature (Lundén et al. 2012) supporting a clear argument to suggest that radiographers are in fact working in line with the practice expectations (Data box 9.9).

Data box 9.9

Supporting Data
'Continuity and consistency of care and establishing trusting, empathetic and reliable relationships with competent and insightful healthcare professionals is key to patients receiving effective appropriate care' *(National Institute for Health and Clinical Excellence 2012: 12)*

From the patient perspective, the maintenance of a professional persona has been shown to include technical competence and efficiency (Bleiker et al. 2018) with competence not being viewed as just a technical measure but a measure of excellence (Tronto 2015: 5). However, what is of most significance during the radiographer-patient-technology interaction is that the quality of care provided from the patient perspective is influenced by the perceived technical confidence and competence of the radiographer as previously described. Whilst the radiographers code of professional conduct dictates that radiographers must behave and perform in a manner that inspires confidence in the profession (The Society and College of Radiographers 2013) this document, as with HCPC guidance (HCPC 2013;

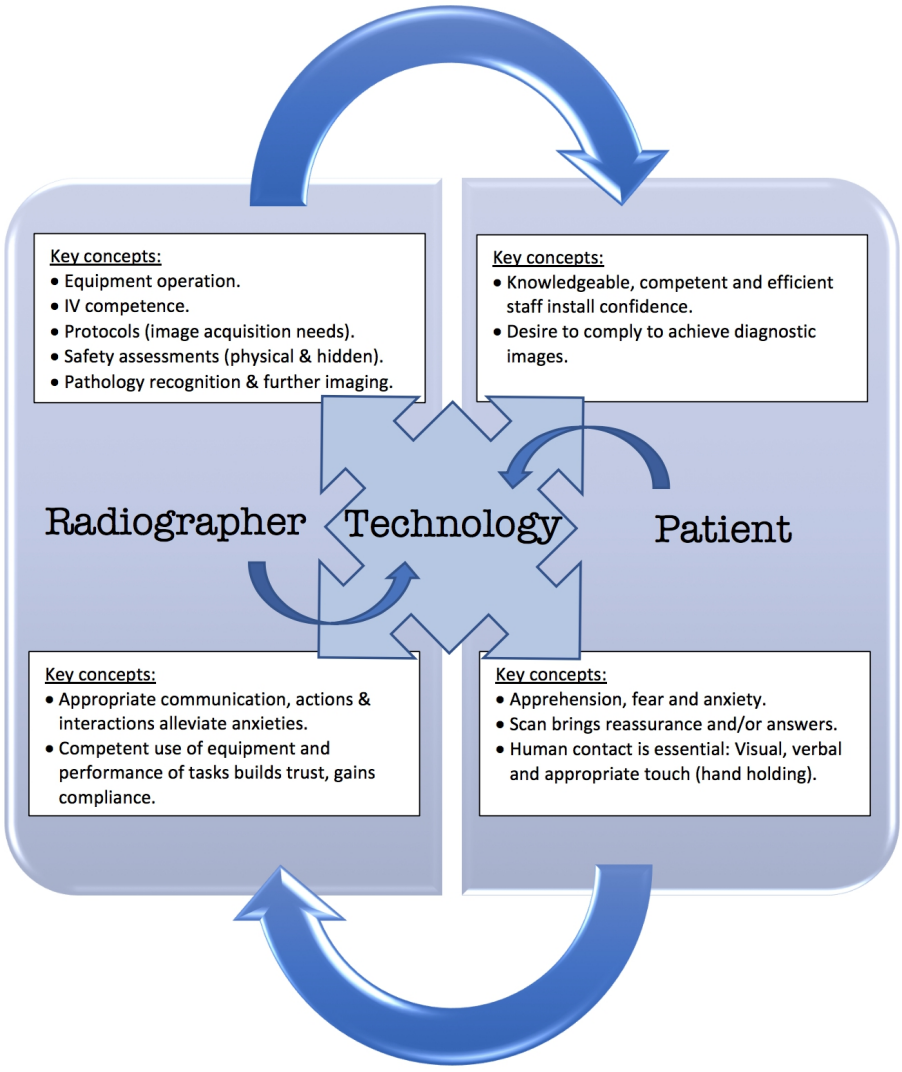
HCPC 2016), fails to explicitly acknowledge that operating with technical confidence and competence is an essential element of providing care in a high technology area such as CT. Peer reviewed literature (Carlsson and Carlsson 2013; Nightingale et al. 2017) has identified that perceived behavioural traits of confidence and competence are essential to the construction of a trusting relationship between the radiographer and patient, supporting the argument that the perception of being cared for is affected by the way in which the radiographer conducts themselves and operates within the clinical environment. Evidence used to support the theories presented in section 9.2.2.1 (Table 9.1 *Patient 1*) also validates this argument by affirming that the patient's interpretation of a situation can significantly alter their perception of the quality of care they are experiencing.

9.3 The Construction of Care in the CT Clinical Environment

When consideration is given to the construction of care as presented within the limited clinical evidence base (Andersson et al. 2008; Lundvall et al. 2014; Munn et al. 2014), themes of care become grouped into both human and technology related elements. Whilst Andersson et al (2008) explicitly identify 2 distinct main themes (direct patient related areas of competence and indirect patient related areas of competence), other authors (Lundvall et al. 2014; Munn et al. 2014) present more cohesive themes incorporating the technical and patient focused elements of care as holistic practice. Whilst Lundvall et al's (2014) work places focus on the technical aspects of radiography practice, the study (Lundvall et al. 2014) was conducted and presented from a dualistic perspective suggesting that professional practice encompasses the operation of sophisticated technology, combined with human communication and patient care. Munn et al (2014) supports this by arguing that medical imaging represents the meeting of two worlds whereby technology is used to improve patient outcomes, whilst a social encounter with the patient is required to enable the provision of holistic care.

My interpretation of the construction of care within the CT clinical environment is built around the core category: Dynamic assessment and reaction to need. The foundations of this construction are grounded by the 2-way mutually respectful relationships which are constructed between the radiographer and the patient, the patient and the technology and the way in which the radiographer interacts with the technology and patient simultaneously to achieve the shared goal of diagnostic CT images as efficiently and effectively as possible. This co-constructed model of care is both technical in nature but focused entirely around assessing and meeting the needs of the individual patient and is therefore inarguably considered as patient centred (Figure 9.4).

Figure 9.4 The co -constructed model of care revised to include key concepts.



Whilst image acquisition is recognising the task orientated process, it is the human element of providing care, which is identified as being cognitive, dynamic and responsive to individual need. Contrary to the evidence extracted from the professional documentation (HCPC 2013) (Data box 3.24 & Data box 3.25) care as constructed in the CT clinical environment goes beyond the performance of dehumanised tasks, which undervalue the role of the radiographer during the CT examination, to include the provision of care which is focused around the assessment and meeting of individual patient needs. This supports the argument that legislative and guidance documentation needs to consider the context of the environment in which care is being provided before it can be considered as guidance on the provision of care applicable to the entire healthcare workforce.

Chapter 10: **Conclusions**

10.1 Conclusions

The main aim of this research was to explore how care is perceived, delivered and experienced by those directly involved during a diagnostic CT examination, the radiographer and the patient, and to develop a theory of care as constructed within the specific context of the CT clinical environment. Therefore, the conclusions presented in this chapter are limited to the scope of this study which has remained purposefully focused upon the technical element of a CT examination. Existing evidence relating patient experience and the provision of care during radiographic examinations is extremely limited and therefore the results of this study are valued as being the foundations from which further research into the subject of care within radiography can develop and grow. Whist the findings and constructions presented within this thesis are limited to the specific context of the technical CT clinical environment of the host site, the research presents an original and unpublished model of care which can be tested and evaluated against other high technology areas of clinical practice both inside and outside of the field of radiography.

When answering the main research question of *how is care constructed within the high technology diagnostic imaging environment of CT?* data collected from radiographers, patients and literary sources identified that within the context of this study, care within CT is constructed around the dynamic assessment and reaction to need. Underpinning this theory is the 2-way mutually respectful relationship built between the radiographer and the patient and the relationships constructed with technology. The resultant co-constructed model of care as delivered and experienced within the CT clinical environment is complex and multifaceted.

Data taken directly from participant disclosures identified that radiographers must recognise and act upon four major interrelated categories of need (section 6.4.4.1 Figure 6.9) inclusive of both technical and human elements. With the achievement of accurate diagnostic images

being constructed by both participant groups as an essential part of being cared for. However, the radiographer's role during the examination stretches beyond the identification of the technical requirements of the scan to include roles traditionally associated by the radiographers within this study as being nursing practice. This includes cleaning patients and changing soiled bedding. There is also a requirement for radiographers to demonstrate additional holistic skills including counselling and negotiation when scanning emotional and anxious patients. The salient and emerging knowledge which has led to the development of the conclusions presented within this chapter has been included in tabular form within Appendix 18.

Radiographers within this study believe, and construct, themselves as dynamically responsive to the patient's individual needs and evidence presented by both participant populations suggests that in the context of the study population, this is the case in practice (see section 6.4.1). This contests my own prior assumptions that a cavern may exist between the care that patients want and need during a CT examination and what radiographers believe they should be delivering to the patient. Running parallel to the radiographers desire to achieve the goal of a successful diagnostic scan, which has proved to be shared goal with the patient population of this study, is the aspiration of enabling the patient to leave the room feeling like the experience was not as bad as they had thought it would be (Section 6.4.1.3 Data box 6.6 *Radiographer 4*). A concept also presented within existing literary data sources (Nightingale et al. 2012; Carlsson and Carlsson 2013). In an environment where care is co constructed to include image production by a competent professional with the knowledge and expertise to perform tasks efficiently and accurately, I believe that the patient professional relationship cannot practicably be considered a true partnership. However, this does not mean that the decisions made to meet individual needs are not considered to be patient centred. As an alternative to a true and equal partnership, I would argue that it is the 2-way mutually respectful relationship which holds more significance to the perception, delivery and experience of care within the CT clinical environment.

Making any assessment of need more complex during a diagnostic examination is the limited information the radiographer has regarding the patients presenting physical and psychological condition prior to meeting the patient for the first time. Any number, or combination, of the needs identified (section 6.4.1.1 Figure 6.9) can present at any time during the examination and must be acted upon appropriately. It is therefore both the interpersonal and technical skills deployed by the radiographer during the radiographer patient interaction that enables individual patient needs to be met whilst achieving the shared goal of a technically accurate examination all within a relatively short period of time. Essentially, skills that take the radiographer within the context of this study beyond that of a robotic 'button pusher' into a provider of compassionate patient centred care. I believe that this emerging evidence could help to addresses the recommendations of Bleiker et al (2016) and Bolderston et al (2010) who support the development of an ontology of care to create an evidence based educational framework underpinned by an understanding of what compassionate care is within radiology and radiography practice. It must also be remembered that both patients and radiographers within this study provided evidence to suggest that CT radiographers at the host site are working in a manner which is commensurate to the compassionate care ideals represented by the 6C's of nursing care so by default are meeting with some of the practice expectations of *The NHS Constitution* and other practice guidance discussed in Chapter 3.

The findings presented in this thesis contest the argument that the time needed to build trusting relationships with the patient is a luxury not afforded by modern radiography departments (Mathers et al. 2013). Instead radiographers within this study were shown to relish the challenge of building a relationship in a short period of time, using past experiences and knowledge to rapidly assess each patient and their presenting needs. Whilst practice guidance (National Institute for Health and Clinical Excellence 2012) fails to consider dynamic assessments of need based on first impressions as being essential to quality care delivery within specific

clinical environments, radiographers within this study disclosed the benefits of such practice when aiming to deliver care which aims to meet with the individual needs of each patient during relatively short, solitary interactions. The establishment of trusting relationships is not absent within radiography. I would instead argue that the relationship is different to that experienced within the ward or care home setting and is contextually specific. An argument validated within nursing literature (Lundén et al. 2012). Therefore, the CT radiographers within this study are considered to be meeting with practice expectations relating to relationship building as defined within the professional and legislative documentation discussed in chapter 3. As with the radiographer's interaction with the technology, it is the way in which the radiographer patient interaction occurs no matter how fleeting it is, that signifies how patient focused the examination is, not the actual length of time spent with each patient. Whilst others (Lundvall et al. 2014) have identified that care within radiology is focused around a series of cognitive problem solving processes which draws upon taught knowledge and exposure to varied and challenging situations (Tronto 2015: 7 & 30), it is the significance of the speed at which decisions are made and acted upon with in the CT clinical environment which fails to be recognised in published evidence. These skills have unfortunately, prior to this study, been dismissed as rushing and non-patient centred (Mathers et al. 2011; Hayre et al. 2016). Whilst practice guidance (HCPC 2013) recognises problem solving as being a skill essential to the identification of a proficient radiographer, more emphasis needs to be placed upon the significance of these skills when providing patient centred care whilst producing technically accurate images as part of the task orientated process.

I propose that the CT examination has a significant purpose within the patient's own reality, and from the patient perspective the examination is also significant to the clinicians who are accountable for decision making around the patient's future. It is the technology, and the radiographer's interaction with that technology and the patient, that is invaluable to the patient's wider healthcare journey and if the patient could see no value to

the CT examination it is believed many would not undertake such uncomfortable and daunting examinations. This study agrees with the work of Barnard and Sandelowski (2001) by supporting the argument that when exploring the perception of care, it is not the technology per-se that affects the relationship between human and machine but the context and way in which it is used. Further this study has addressed the recommendations of Barnard and Sandelowski (2001) by focusing on the human interaction with the technology within the CT clinical environment and the meanings and values the technology holds for each of the participant groups within this study.

Professional guidance needs to promote technology as part of the care experience and not apologise for its use. Technology should not be portrayed as a barrier to high quality care delivery but valued as a significant pathway to care giving, as long as it is perceived by the patient as being operated both confidently and competently.

The posited model of care (Figure 7.2 & Figure 9.4) as constructed from the original data supplied by participants within thesis, and further reinforced with additional knowledge taken from existing healthcare evidence, is proposed as a valid, evidence based tool, which can be utilised as a means to determine whether the needs of patients are, or can be, met within the confines of a high technology clinical environment.

10.2 Implications for Practice

It is agreed that the significance of the communication skills needed to achieve and fulfil the co-constructed model of care in practice may be underestimated (Reeves and Decker 2012). To fully embrace and fulfil the presented model of care to enhance care delivery and experience, the suggestions of Mathers et al (2013), who advise towards the inclusion of non-traditional communication skills in professional training and education are recommended for both pre- and post-registration radiographers.

Further to this recommendation would be the inclusion of end of life education to include, palliative medicine, support care, and mechanisms of death and dying (White 2017). This would provide a greater understanding of all areas of palliative care and medicine, empowering diagnostic radiographers to provide greater support and guidance to patients and carers when necessary.

As a profession, I believe that diagnostic radiographers need to be at the forefront of embracing and promoting technology and the high technology environments in which we work as being significant to the care pathway and care giving. Diagnostic radiographers should not hide behind, or make excuses for, being a technical profession. This study demonstrates the significance of the technology to the patient and has strengthened the argument for diagnostic radiography to be promoted and celebrated as a patient centred caring profession.

It is hoped that radiographers in practice will reflect upon how significant their behaviour and actions can be on the patient's perception and experience of care. Newly qualified radiographers have disclosed the importance of watching and learning from others and whilst it is understood that classroom based learning cannot teach the skills needed to interact competently and confidently with the technology and patient simultaneously, the knowledge radiographers learn from each other in the clinical setting is invaluable to the promotion and execution of the presented technological, yet patient centred, model of care presented in chapter 7 and 9 (Figure 7.2 & Figure 9.4).

10.3 Reflections

Evidence collected throughout this study indicates that involvement with this research has not only achieved the original goal of giving a voice to the patient group, enabling the construction of care within CT to be understood from the perspective of the patient population, but has also provided radiographers with a safe platform to verbalise their personal

opinions and feelings whilst stimulating reflexivity relating to individual and collective practice. A notable pattern observed directly proceeding the radiographer interviews was that participants would naturally initiate and direct, open and honest reflective discussions relating to patient care and practice within the CT department. This demonstration of engagement suggests that the subject of care is not only one of significance to the individual participants, but also a thought-provoking topic to the collective professional group. The interpretation of this behaviour was also reinforced by the way radiographer participants became very passionate and emotional during the interviews when disclosing specific memorable interactions with patients or events which had been experienced over the course of their developing careers. Significant to this was the way in which these interactions and experiences influenced them on both a personal and professional level, validating the notion that the constructions of reality, or in the context of this study care, are influenced and shaped through experience, interactions and individual cognitive meaning making (Young and Collin 2004; Mills et al. 2006a; Ültanir 2012).

In keeping with the interactionist perspective, both radiographer and patient participants disclosed data to substantiate that actual lived experiences are pivotal to the construction of a perceived reality relating to care within CT and the wider NHS. Whilst media sources and stories from friends and relatives were shown to influence patient expectations of what is happening within the NHS with regards to finance, oversubscribed services and overworked staff, it was noted that it was the actual and lived personal experiences that defined and constructed the perceived reality of care during CT examinations. Whilst some patients disclosed unsatisfactory experiences within the wider healthcare system, it was observed that this did not overshadow or negatively influence the perceived level of care the participants had received during their CT scans. The perceptions and interpretations of events that were disclosed by the participants were directly constructed from both positive and no so positive experiences and interactions that had occurred during their individual CT examinations.

Conveying my own interpretations and constructions to an audience who have not had the advantage of the immersive experience of listening to in-depth personal experiences whilst witnessing the participants individual and collective emotions through verbal disclosures, body language and tone of voice which were generated by the personal dynamics of the interview situation, has been challenging. However, by presenting this work verbally in the conference setting (see section 10.6) I have been able to convey the participant passions and personal feelings in a succinct, expressive and meaningful manner to compliment this written text and disseminate the findings to a wider audience.

10.4 Limitations

This study represents a single researcher's interpretation of disclosed participant data evaluated and compared against relevant literature and professional and practice guidance. The subjective nature of a qualitative study must be considered when reflecting upon the presented interpretations of already subjective primary data supplied by the research participants. Of equal significance when considering these interpretations is that the radiographer participants were known to me as colleagues and that the influence of these professional and personal relationships, coupled with the inside research perspective, will have influenced the resultant interpretations. Therefore, before the theories and interpretations presented within this thesis can be considered nationally transferable, the presented theory must be tested against data collected from a range of diverse research sites (See section 10.5). However, what also needs to be considered alongside the limitations of this being a single researcher study are the significant benefits that being a lone researcher brings. I was fortunate in the fact that I was able to fully engage and immerse myself with all of the collected data, I was able to cognitively relive each interview and link responses during each stage of the data collection and analysis to steer the interviews and deploy relevant dynamic theoretical sampling during the interviews whilst maintaining the integrity of the adapted GT method.

The scope of this study and therefore the conclusions drawn from the data are considerably limited by the aspects of the CT examination that are explored, and the representativeness of the research participants recruited into this study. Whilst limiting the study to the technical aspects of the CT examination has facilitated the construction of an original and much needed model of care specific to the context of the CT examination at the host site, I am mindful that the presented model and the conclusions drawn remain untested against a wider population and are not considered to be absolute.

Whilst the diversity of the patient population was primarily limited by the geographical location of the study site, efforts were made to make the research more inclusive via the provision of telephone interviews to encourage greater participation. Factors which have been shown to significantly effect patient recruitment to healthcare studies are the time and resources needed to attend the research site (Archibald and Munce 2015). As discussed in section 5.2.3, time becomes significant, especially to those living with a terminal illness. Although evidence (Kendall et al. 2007; Newington and Metcalfe 2014) would suggest such patients are keen to ‘give something back’ to the system by taking part in research, juggling pre-existing appointments with additional research commitments can become overwhelming (Archibald and Munce 2015). As this study was self-funded the luxury of offering financial incentives to offset travel costs was not feasible and could have limited the willingness of participants to engage with the research (Newington and Metcalfe 2014; Archibald and Munce 2015). What must, however, be remembered is that these limiting factors are by no means specific to this study. Lack of diversity in recruitment due to limited funding to provide interpreters, travel costs, childcare and wage reimbursement is a problem identified across the field of qualitative healthcare research (Patel et al. 2003; Kendall et al. 2007; Newington and Metcalfe 2014; Archibald and Munce 2015).

Although there are no specific applied rules within qualitative research to guide acceptable sample size and recruitment numbers (Archibald and

Munce 2015), it is openly acknowledged that full data saturation may not have been achieved due to the time constraints of the PhD pathway and the previously identified difficulties associated with recruiting a diverse range of patients into a study of this nature (Patel et al. 2003; Kendall et al. 2007; Newington and Metcalfe 2014; Archibald and Munce 2015; The Society of Radiographers 2017). Whilst it may be argued that 5 patient participants (plus 1 radiographer with experience of being a patient) indicates low recruitment, the amount of rich data supplied by each participant should not be underestimated. With each interview lasting on average 60 minutes, the amount of valuable data shared by each participant was extensive. What becomes more important to consider is whether the data is relevant. By remaining sensitive to the data being supplied and continually reflecting back on other participant data, I was able to ensure that each interview provided relevant data to address the lines of theoretical questioning that had been generated and recorded through reflexive memos at each stage of the research journey.

The flexible 3 stage approach to recruitment (section 5.2.3 Table 5.3) ensured that recruitment could continue over a prolonged period without risking the integrity and practicalities of deploying the constant comparative method. Too many keen participants at one time could have had a negative impact as the time needed to conduct, transcribe and analyse each interview before the next occurred would not have been practical or achievable.

Whilst patient accounts were limited to outpatient (OP) experiences. In-patient (IP) cases and IP care were at the for front of disclosures made by CT radiographers (Data box 8.6). Therefore, further research into the experience of the perhaps more vulnerable IP group would be advantageous, adding depth to the level of inquiry and understanding relating to the construction of care in CT. However, during study development, IP inclusion was felt to be too intrusive for a first line study of this nature.

The recruitment strategy used for this study has included some limitations that should be made explicit and will be corrected in any future research. In chapter 5 (section 5.2.3) I highlighted the unforeseen impact of recruiting from an ill population. An alternative recruitment strategy would be the removal of the option of an initial telephone call and to instead provide the patient with a PIS (Appendix 9) prior to making first verbal contact. This would permit an informed choice to be made by the patient to allow the telephone conversation to be made and would have removed the potential for misunderstanding and unwanted intrusions. A second limitation was that whilst consideration was given to the notion that participants may get emotional during the interviews, I had not fully considered the benefits and requirements of providing the participants with a list of support recourses which could be accessed should they have needed them following the interviews. Any future research should include the development of a recruitment protocol to support the needs of a potentially vulnerable population before during and after data collection, whilst mitigating the potential of unwanted intrusion.

The lack of participant diversity within this study is also applicable to the radiographer population. The study lacks experiences and perspectives from a wider, more ethnically diverse, staff group which is needed to address any cultural and social expectations of patient care that may exist in practice. Although the opinions of a range of radiographers were sought (i.e. locums, those recently moved to the area and those who had worked and trained at other institutions), data from a more ethnically and regionally diverse population would further enhance the value of this research.

The impact of the lack of diversity amongst both participant groups is that the grounded theory presented, and conclusion made within the context of this thesis cannot be considered as representative of the population as a whole. As previously highlighted, further research is required across a broader demographic of both participant groups with inclusion of a wider range of experiences across a significantly broader range of sites and

institutions before truly representative conclusions can be drawn from the data.

It must be made explicit that an assumption has been made in the context of this study that all interactions disclosed by the patient group were in relation to the radiographer patient interaction. However, in practice, the actual occupational identity of the healthcare worker who is being described by the patient is unknown and may be a healthcare assistant, student radiographer or assistant practitioner. Whilst this study does not aim to provide a definitive answer to how radiographers should provide care, it serves to provoke reflection in relation to practice and how behaviour can influence the perceptions of others and therefore the patient experience.

Whilst radiographers within this study have been shown to present themselves as providing individual person-centred care, actual practice can only be truly observed using clandestine observation study methods (Silverman 2013: 49). Unfortunately, research within the healthcare setting is subject to ethical restrictions preventing practice observations without obtaining prior consent from those being observed and the knowledge that practice is being observed may affect participant behaviour and therefore influence the validity of the data collected (Sheldon and Sargeant 2009). This does not mean that there is no room for further observational research to evaluate care giving processes within CT and radiology. Such research would enhance the available evidence base but would need to be considered alongside the perceptions of patients who have experienced care at times when staff were not being observed to establish if harmony, or discord, is present within the interpretations.

The perspective of a symbolic interactionist and constructivist study does not view the real world as static but instead continually morphing, even over short periods of time, therefore the results of this study are considered to be the foundations from which further GT studies evaluating the construction of care in the clinical CT environment can evolve.

However, before this can be successfully achieved, the grounded theory and constructions presented within this thesis must be tested and compared against data supplied from additional study sites.

10.5 Research Recommendations to Validate the Presented Grounded Theory

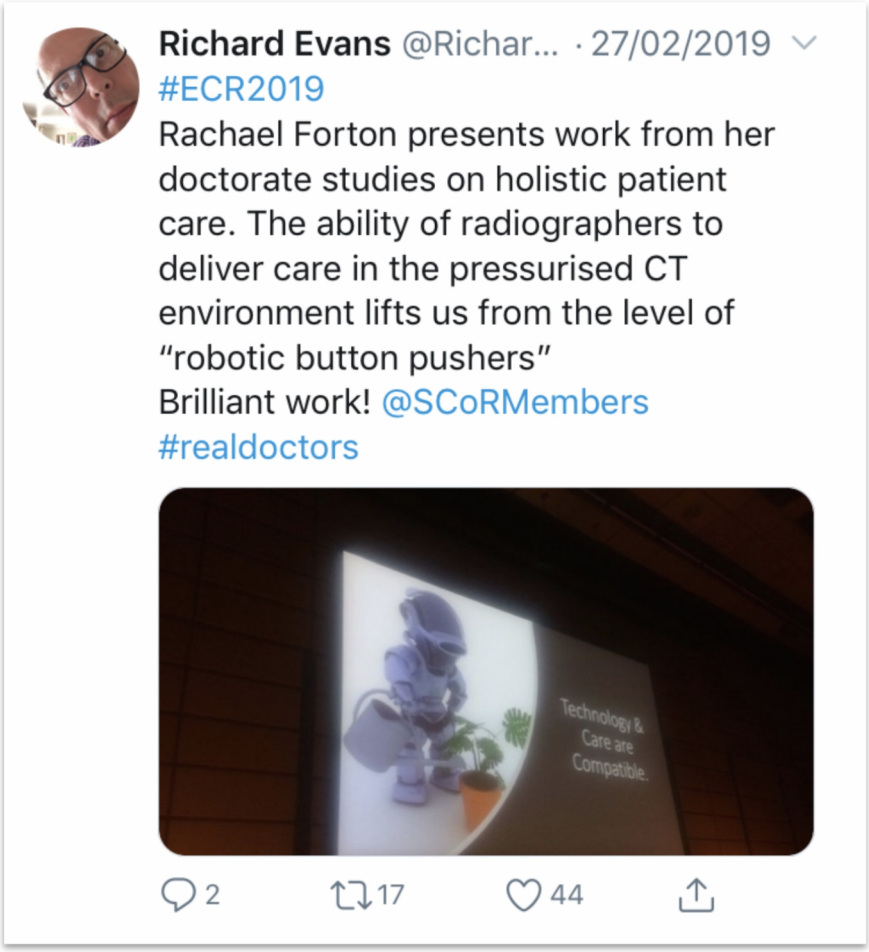
Before the theory presented within this thesis can be considered to be valid and applicable to radiography practice, the grounded theory which argues that care within CT is constructed around the dynamic assessment and response to need must be tested against a larger study population and more diverse research sites. Further research following the methods described in Chapters 4-7 is needed to establish whether the theory is robust and transferable across multiple sites. Additional considerations would be whether the theory is transferable across multiple imaging modalities, radiotherapy and other diverse high technology healthcare environments.

Only when the grounded theory presented within this thesis is validated against a larger data set will the profession be able to develop its own context specific philosophy and ontology of care that can be used to guide education and training and raise the profile of radiographers as compassionate, patient centred, caring professionals as the presented co constructed model of care would suggests.

10.6 Dissemination and Publication Plans

The main findings of this study were accepted and delivered as oral presentations at the European Congress of Radiology (ECR) in Vienna on the 27th February 2019, and The UK Imaging and Oncology Congress (UKIO) in Liverpool on the 11th June 2019. The work included in this thesis was well received by both the UK and European audiences (Figure 10.1).

Figure 10.1 Evidence of well received dissemination at ECR 2019.



To ensure that the findings of this research are made accessible to a wider audience, thus increasing the works ability to impact on practice and training, future plans for dissemination through publication are proposed and summarised in Tables 10.1, 10.2 & 10.3.

Table 10.1 Proposed publication 1.

Title of Journal Article	Target Publication	Abstract
Technology: A pathway of care giving in CT	Radiography	**Background:** It has been suggested that high technology imaging departments are a barrier to the provision of patient centred care, however in an age where technology dominates the clinical healthcare setting, surely the time has come to challenge these historical assumptions and embrace the radiographers use and interaction with technology as being central to care provision. **Methods:** A Grounded Theory (GT) methodology using semi structured interviews was used to obtain primary data from CT radiographers and patients relating to the use and perception of technology during CT examination. Recruitment and data collection were performed at a 1200 bed teaching hospital over a 6-month period. **Results:** Patients identify imaging technology as having a significant purpose within their healthcare journey, as such technology is viewed as a pathway of care giving providing the equipment is perceived by the patient to be operated confidently by a competent professional.

Table 10.2 Proposed publication 2.

Title of Journal Article	Target Publication	Abstract
Care in the high technology CT clinical environment.	Radiography	**Background:** Patient centred care and the 'patient voice' are core components of UK healthcare policy and practice guidance. This study explored how care is perceived and experienced within the high technology environment of CT. **Methods:** A Grounded Theory (GT) methodology using semi structured interviews was used to obtain primary data from CT radiographers and patients. Recruitment and data collection were performed at a 1200 bed teaching hospital over a 6-month period. **Results:** The patient radiographer relationship and the radiographer's role in providing care within CT are complex and multifaceted. Both patients and radiographer's perceive CT imaging to be an integral part of the overall patient care and treatment pathway. As such, the act of being imaged is perceived as a care process and while image acquisition is recognised as a task orientated and technical process, the human element of providing care is cognitive, dynamic and responsive to individual need. Importantly, patient confidence in the care received was influenced by the radiographer's ability to build a trusting relationship and display technical competence and this in turn facilitated active compliance resulting in a technically accurate examination. **Conclusions:** A new model of care encompassing both technical components and patient-centeredness has been constructed and will be presented. This model promotes a new vision of patient centred care based on care perceptions within high technology environments

Table 10.3 Proposed publication 3.

Title of Journal Article	Target Publication	Abstract
Diagnostic radiography: A caring profession?	Radiography	**Background:** Diagnostic radiographers have been portrayed as task orientated providers of imaging services, prioritising speed of examination over holistic patient centred care. This paper challenges these assumptions by suggesting that CT radiographers are in fact compassionate professionals who provide patient centred care to a diverse range of patients often with complex needs and specific imaging requirements. **Method:** A Grounded Theory (GT) methodology using semi structured interviews was used to obtain primary data from CT patients. Recruitment and data collection were performed at a 1200 bed teaching hospital over a 6-month period. **Results:** Despite previous literature suggesting that the technical environment created a barrier to patient care, patients within this study confirmed that radiographers provide care commensurate to the nursing ideals represented by the 6C's (Care; Compassion; Competence; Communication; Courage; Commitment).

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Appendix 1: Supporting Reflections

I began this research journey from a predominately positive and objectivists background, influenced by my career as a clinical CT radiographer and the requirement for me to demonstrate evidence-based practice within the clinical environment. My research experience was limited to a systematic review conducted as part of my MSc. in Medical Imaging and performing CT scans on patients who were part of clinical research trials.

Whilst this research has given me greater insight into the world of qualitative research, I would not place myself solely under the label of a ‘qualitative researcher’. Instead this process has taught me that what is most important when embarking on any piece of research, is that once a pertinent research question has been identified, it is the selection of an appropriate methodology and theoretical perspective to enable that question to be answered in a valid and robust manner which becomes most significant. A suitable method needs to dictate and direct the study, and this will determine the success of the research outcomes.

On a personal level I found that as a novice researcher it was imperative for me remain open minded and receptive to new ways of thinking, and on a practical level to remain flexible, reflective and adaptable throughout the process. I found that trying to stick rigidly to the first selected methodology of Critical Discourse Analysis (CDA) would have limited the scope and the outcome of the work, and that the key was to take tested methods and adapt them to meet the research setting, scope of study, and the times frames allowed. This has resulted in a fluid research journey where my knowledge and research techniques have grown steadily throughout the past five and a half years. I am however very conscious that the completion of this small-scale single research study does not make an me expert qualitative researcher, nor are the arguments presented in this work entirely free from elements of bias.

Some of the arguments presented within this thesis have undoubtably been affected by my own clinical bias and as such some of the concepts discussed and arguments presented may be perceived or interpreted as being overly positive towards the radiographer population. I recognise that whilst radiographers and patients presented primary evidence to support my own perceptions and constructions, the evidence presented has been collected from a relatively restricted sample. If this study were to be conducted by other researchers from both the insider and outsider perspective, their interpretation of the care provided by radiographers and received by patients, based upon the study population presented, maybe quite different. For example, it was very easy for me to pick up on disclosures which supported my own constructions and preconceptions, such as the concept that the act of cleaning patients is associated with a traditional nursing role. As such the arguments presented on this subject have not been substantiated by literary evidence, partly due to its absence within the evidence base, and could therefore be considered as weak. This is why it became so important to use the primary disclosures and perceptions from other radiographers to validate my interpretations. For example, the disclosures made by radiographer participants (e.g. Data box 8.6 radiographer 8, uses the term nursey job) indicates that whilst these points may be anecdotal, and a construction based on my own interpretations, the examples given are a reflection of what the radiographer group believe to be true and are therefore considered to be valid within the specific context of this research, the study population, and in light of the limited published evidence. What is most significant to note is that as my own knowledge and understanding of Grounded Theory (GT) developed, I was able to use the constant comparative method to ensure that any constructions and interpretations I made were validated or contested using other participant data. Being able to use additional data sources such as journals, online databases and professional publications to validate my interpretations and support my arguments was also invaluable in limiting the inherent insider bias that I brought to this research. As discussed in section 4.2, one of the strengths of Strauss and Corbin's method is the way literature can be used to limit insider bias. I found the more I read around the concepts that where being extracted from the participant data, the more I began to

question my interpretations and constructions. Through this process I became more sensitive to the meanings behind what was being said and done, rather than taking disclosures as face value events and experiences. As a result, I found that I was questioning the data more and more with *how* and *why* questions.

As highlighted in Chapter 3 the initial piece of research undertaken, the Critical Discourse Analysis (CDA), is presented as an un-amended piece of work conducted very early in research journey and before my own understanding of qualitative research and the impact my own perspectives and opinions on the interpretations were fully understood or appreciated. As such the data presented was significantly influenced by my own, at the time, narrow practitioner perspective, which has resulted in a lack of criticality. Whilst the resultant poster presentation served to highlight awareness and encourage other radiographers to challenge their own perceptions of the NHS Constitution, I became very mindful through my own reflections, that my interpretations were heavily influenced by my own experiences within the system, not only a as radiographer but as a person who had suffered personal losses and at times felt let down by the NHS system. I was reluctant to publish further work relating to the CDA as I was conscious that my own opinions were changing and that the arguments I had originally presented began to become challenged.

The more I challenged my interpretations and the findings of the CDA, the more I appreciated how valuable the opinions and experiences of others are in developing and conducting substantiated qualitative research. My developing awareness of the impact of my own perceptions, interpretations and biases were having on the developing constructions drove me to find a methodology which would enable me to collate the opinions and perceptions of others, whilst ensuring that the outcome of the work would be taken beyond the production of a narrative to describe a process. My predominantly positive stance began to shift towards the interpretive paradigm. As I questioned the contents of the NHS Constitution and its relevance to my own clinical environment I began to read more widely

around the subject of care and care provision in technical environments. Whilst the clinical evidence base in this area was limited, what I found was that some of the published work was based on the assumptions of other professional groups and often presented radiography and high technology clinical areas, as being uncaring and non-patient focused. This contradicted my personal experience, as I had always prided myself on the way I was able to provide care, or what I thought was care, to the patients with whom I interacted.

Navigating my way around the plethora of qualitative methodologies available to me was challenging. However, because the methodologies I was investigating were so alien to me, I found I was questioning each to ensure they would fit my own way of thinking and would provide a suitable method to enable me to answer my research question. Reflecting on the methods I used, as discussed within the main body of this thesis, I am mindful that the work could be further expanded, improved and validated, with ethnographic observations. At the time of research development, I felt that conducting observations as an inside researcher would have given a false representation of actual practice. I believed that participants were likely to adjust their behaviour knowing that I was observing their actions. Further restricting factors were my clinical commitments and my self-funding position. Finding and spending a considerable amount of time at an alternative location was logistically and financially unachievable. However, due to the lack of published evidence in the field of patient care in CT, I have always positioned this research as a first line study to provide foundational data focused around the individual thoughts, constructions and opinions, as presented by those working in and using the CT clinical environment. The result of focusing the study in this way has I believe, presented a new model of care which provides the profession with a context specific model of care which can now be tested against practice in other Trusts using further interview research and ethnographic observations.

Further methodological limitations were highlighted when I underestimated the vulnerability of our CT patients. This led me to experience unexpected

negative feelings during the recruitment of participants who were from an ill population (See journal entry 5.3). Only after discussing my experiences with other researchers, have I seen that the simple act of sending the patient information sheet (PIS) prior to contacting the patients by telephone, could have changed the outcome of, or prevented unwanted or potentially intrusive telephone calls from happening. It has also made me realise the importance of working collaboratively with other researchers. I believe that such oversights as discussed in section 10.4 would be noticed through learning from the experiences of others. Unfortunately, this was again one of the limitations of self-funding the work. However, by working as a lone researcher in this way I have been able to control the pace of my own development and learning, which as a dyslexic student has been extremely beneficial to my PhD. journey.

The methods used within this study have also had a significant impact on my clinical work. During the research interviews I found out things about the radiographer participants that I had not previously known. Their previous careers, knowledge and skills which were completely unrelated to radiography became exposed only because I had taken the time to listen and find out more about why they had become radiographers. I gained a far greater understanding of them as people and have used this to become a more understanding manager to these radiographers since moving into a leadership role within the host Trust. I have also become more conscious of the importance of ensuring that the patient voice is heard when evaluating clinical practice and services. A single viewpoint will provide a narrow perspective. Multiple views stimulate questioning, introduce new ideas and ensures that one’s own views are challenged appropriately to initiate and drive positive change. Undertaking and completing this research has also given me the confidence to join the patient experience team within the host Trust. By doing so I will be able to ensure that the additional knowledge and skills I have learnt through the research process will be used positively to benefit a wider patient demographic and the services provided at the NHS Trust.

Whilst my evidence-based thinking and criticality has grown during the course of this study, I am conscious that this is an area that needs further development and will continue to grow as I take on future research projects exploring patient experience and care within radiology. Whilst the scope and context of this study may be considered limited, it does highlight the need for more qualitative research to be conducted within the field of radiography, which focuses upon patient and radiographer experiences and the construction of care within high-technology imaging environments. I believe that this work can now be used as the platform from which future qualitative research in the field can evolve.

Appendix 2: Poster

UNIVERSITY of BRADFORD
Celebrating 50 years

Are the models of care championed by the NHS Constitution fully applicable to radiology?

*R.Forton, MSc; M. Hardy, PhD; A. Sargeant, PhD.
University of Bradford, UK.

BACKGROUND

The NHS Constitution details the principles, values, rights and responsibilities of the NHS, making explicit to the public, patients and staff what can be expected with regards to quality care and service provision[1,2]. Underpinned by professional and regulatory body documentation[2,3,4,5,6], the principles of care defined in the Constitution aim to inform the care culture within the NHS. However, it is unclear what impact this document has on societal expectations of care and the patient-radiographer relationship or whether the principles, as described, are fully applicable within high technology imaging departments.

METHOD

Using Critical Discourse Analysis, guided by the work of Fairclough (2015) [7], a qualitative analytical framework was developed to systematically review the language and phrasing of the NHS Constitution, explanatory documents and relevant professional and regulatory body documentation (Fig 1). Extracted data were explored in depth (Fig 2) to derive themes.

Fig 1. Reviewed Documentation:

- *The NHS Constitution [1] (2015).*
- *Handbook to the NHS Constitution [2] (2015).*
- *HCPC Standards of Proficiency Radiographers [3] (2013).*
- *HCPC Standard of conduct, performance and ethics (Your duties as a registrant) [4] (2016).*
- *NICE Patient experience in adult NHS services: improving the experience of care for people using adult NHS services [5] (2012).*
- *SCoR Code of Professional Conduct [6] (2013).*

Fig 2. Snapshot of the Data Extraction Process:

RESULTS

High quality care, as defined by the NHS Constitution [1], focuses on three interrelated elements: valuing patients as individuals; autonomous professional practice; and the generation of positive working environments. However, these are derived from generic, and perhaps idealistic, nursing models of care that may have limited application within radiology.

DISCUSSION POINTS

- The radiography profession can not dismiss the commonsense ideals that are represented within the NHS Constitution. However, it can be argued that many of the idealistic expectations defined within the document may not be achievable within fast paced diagnostic imaging environments.
- The NHS Constitution[1] and NICE guidance[5] do not consider the contextual and situational variances applicable to the many and diverse healthcare services within the comprehensive care institution that is the NHS.
- Factors constituting quality care within the radiographic environment are defined within an extremely narrow evidenced base[8] and may be misunderstood by other professionals and the public.
- Time to develop mutual respectful partnerships is a luxury not afforded to modern imaging departments. Radiographers have reported a need to make conscious decisions to reduce the time dedicated to each individual patient, preferring to ensure fast and efficient services are maintained[9]. The expectation of being imaged on, or before, an allocated appointment is of equal importance to the radiological patient population as being treated with compassion and care[10].
- Whilst the language of the NHS Constitution is positive and inclusive, the document itself appears far from equitable. Staff are instructed to behave in a specific manner, whilst patients are politely asked if they wouldn't mind showing respect for those who are providing care and services. It is noted that within the NHS Constitution, staff *'work for'*[1] the NHS and *'serve'*[1] the patients. With the service role being a traditional subordinate role in society, this has the potential to negatively impact on the radiographer–patient relationship.
- Although the NHS Constitution may promise patient choice and information regarding diagnostics, referring clinicians and waiting times often dictate the choice of imaging modality available to the patient[11]. It can be argued that the only choice open to the patient is whether to participate in the imaging selected for them or not to attend at all.
- From the radiographers perspective there is an expectation that staff will undertake training and education to facilitate autonomous professional practice. Pledges made regarding the provision of such training may not be achievable at a local level in the current financial climate. Equally when legislation dictates that strict protocols must be adhered to, the level of autonomy that radiographers are permitted to exercise may be significantly reduced.
- Broken promises and devaluing autonomy have been shown to reduce the quality of care provided to patients and consequently may negatively impact upon the patient experience[12,13].

CONCLUSION

Whilst aiming to raise standards, the NHS Constitution may be generating unachievable, idealistic models of care when its application is considered within radiography. Consequently, failure to meet defined care expectations may result in staff demoralisation and sub-optimal patient-radiographer relationships. Radiography, as a profession, needs to challenge nursing models of care championed by the NHS Constitution and develop a more relevant care evidence base.

FUTURE RESEARCH

Quality Watch, a research group who provide independent scrutiny to the quality of services provided to NHS patients, stated in 2014 that they were unable to report on the impact Allied Health Professionals have had on the quality of care within the NHS because there are no substantial data available to support such a report[14]. It is proposed that to understand and report on the quality of care radiographers provide during examinations, and to establish how the radiographic model of care relates to the NHS constitution, we must first establish how care is perceived, provided and experienced by those directly involved in the examination (i.e. patients and radiographers). This will determine the level of harmony or discord between the perceptions of the different groups and the NHS Constitution. This is necessary to identify where interventions may be needed to ensure that care delivery is of the highest possible standard, meeting the needs and expectations of the patient whilst achieving diagnostic excellence.

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Appendix 3: Radiographer Interview Guide

Introduction

- Introduction, role in research and background as a CT radiographer and PhD student.
- Explanation of aims and objectives of the study.
- Explain confidentiality and anonymity.
- Explain recording process, length (1hr) and the nature of the discussion, what will happen to the data and where it will be stored.
- Go through consent form.
- Check if they have any further questions.
- Check they are happy to continue.

Background.

Aims: to get participant talking, define role as a CT radiographer to establish if this includes 'career'.

1. **Could you tell me about your role as a radiographer in CT?**

   possible prompts:

   - What are your specific responsibilities?
   - What do you do on a daily basis?
   - Describe what you do during a typical IVCM exam.
   - How do you decide which examination the patient needs, whether to give IV and how much? Protocols, experience, colleagues.

2. **What personal attributes do you feel contribute to being a successful radiographer?**

   possible prompt:

   - Why is this important?
   - How does this influence professional practice?

Patient Care

Aims: to establish how radiographers define their role. To establish how radiographers, define the care giving process within CT, how they make care and imaging decisions and to establish perceived barriers to the provision of high-quality care

3. **How would you describe care to a student radiographer?**

   Possible prompts:

   - What do you do that you feel classes as care?

4. **Within CT how does a patient experience care?**

5. **How do you provide or facilitate that care?**

   Possible prompts:

   - Describe to me how you would assess the patients' needs and how you ensure that any needs are met?
   - What are your thoughts regarding the involvement of relatives or careers?
   - How do you address issues of consent and right to refusal?

6. **What are the barriers to providing this care?**

   Possible prompts:

   - What was/is the impact of this?
   - What can be done to address these problems?

7. **How do you think a typical patient would describe you and your role in their overall treatment and care pathway?**

Document analysis.

Aims to: establish radiographer's thoughts regarding the outcomes of the previous document analysis.

8. **For the final PhD, a document analysis was performed in order to establish how professional and government publications define care. The analysis has concluded that these documents define care as; valuing the patient as an individual, through autonomous professional practice, in positive working environments. What are your thoughts on this?**

Final Thoughts

9. **Describe to me how you see the future of patient care within CT imaging?**

   Possible prompts:

   - Why do you think this?
   - What would be the catalyst to this?

In Conclusion

Aim: to bring the interview to a natural close, to reiterate confidentiality will be maintained and to give the participant any further information they may ask for.
Thank participant for their time. Reiterate that their confidentiality will be maintained and that if they wish to make contact at any point after the interview they have been provided will all relevant contact details.
Ask if they have any further questions or points they would like to make that have not been addressed.
END RECORDING.

Appendix 4: Patient Interview Guide

Introduction.

- Introduction, role in research and background as a CT radiographer and PhD student.
- Explanation of aims and objectives of the study.
- Explain confidentiality and anonymity.
- Explain recording process, length (1hr) and the nature of the discussion, what will happen to the data and where it will be stored.
- Go through consent form.
- Check if they have any further questions.
- Check they are happy to continue.

Background.

Aims: to get participant talking and to find out contextual information about their scan and the circumstances which lead to the scan.

1. **Could you tell me about your recent CT experience?**

   Possible prompts:

   - How did you feel when you entered the room?
   - How many times have you attended for a CT scan?
   - What does having a CT scan mean to you?
   - Was it what you expected?

The Examination.

Aim to: establish what it is like to have a CT scan, the level type and level of care received. Explore positive and negative experiences.

2. **I would like to know (more) about the care you received during the CT examination and how that made you fell during the scan.**

   So, to begin with could you tell me about the people who were in the exam room with you and what they did for you during the examination?
   Possible prompts:

   - How did he/she/they make you feel?
   - Why was this?

3. **Could you describe to me in more detail the feelings you experienced during your CT scan?**

   Possible prompts:

   - Could you tell me how you felt:
     - when you were left alone?
     - when you were given the injection?
   - Could you tell me more about that/what was that like?
   - What was done to address this?
   - Could you tell me how you felt after the scan?
   - Why do you think that was?

4. **From your experience, is there anything about the care you received which you feel is good practice and could be used to support all patients?**

   Possible prompts:

   - Why did this/what made this stand out as being important to you?

5. **Again, from your own personal experience, could you identify any ways in which we might improve the care provided to patients undergoing CT examinations?**

   Possible prompts:

   - What makes you say this?
   - Could you explain that in more detail?

Summing Up

6. **If I asked you to sum up the care you received during your scan in one word what would it be?**

7. **And finally, along the same line could you sum up the experience of having a CT scan in one sentence?**

In Conclusion

Aim: to bring the interview to a natural close, to reiterate confidentiality will be maintained and to give the participant any further information they may ask for.
Thank participant for their time. Reiterate that their confidentiality will be maintained and that if they wish to make contact at any point after the interview they have been provided will all relevant contact details.
Ask if they have any further questions or points they would like to make that have not been addressed.
END RECORDING.

Appendix 5: Ethics Approval Letters

HSC Business Services Organisation

Office for Research Ethics Committees Northern Ireland (ORECNI)

Customer Care & Performance Directorate
Lissue Industrial Estate West
Rathdown Walk
Moira Road
Lisburn
BT28 2RF
Tel: 028 95361400
www.orecni.hscni.net

HSC REC B

Please note: This is the favourable opinion of the REC only and does not allow you to start your study at NHS sites in England until you receive HRA Approval

31 January 2017

Miss Rachael Forton
1 Hardy Drive
Poringland
NR14 7WL

Dear Miss Forton

Study title:	**An evaluation into the way Patients and Radiographers define, model and experience care in the fast paced high technology environment of Computed Tomography (CT) imaging.**
REC reference:	**17/NI/0025**
IRAS project ID:	**210173**

The Proportionate Review Sub-committee of the HSC REC B reviewed the above application on 30 January 2017.

We plan to publish your research summary wording for the above study on the HRA website, together with your contact details. Publication will be no earlier than three months from the date of this favourable opinion letter. The expectation is that this information will be published for all studies that receive an ethical opinion but should you wish to provide a substitute contact point, wish to make a request to defer, or require further information, please contact hra.studyregistration@nhs.net outlining the reasons for your request. Under very limited circumstances (e.g. for student research which has received an unfavourable opinion), it may be possible to grant an exemption to the publication of the study.

Providing Support to Health and Social Care

Ethical opinion

On behalf of the Committee, the sub-committee gave a **favourable ethical opinion** of the above research on the basis described in the application form, protocol and supporting documentation, subject to the conditions specified below.

Conditions of the favourable opinion

The REC favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements. Each NHS organisation must confirm through the signing of agreements and/or other documents that it has given permission for the research to proceed (except where explicitly specified otherwise).

Guidance on applying for HRA Approval (England)/ NHS permission for research is available in the Integrated Research Application System, www.hra.nhs.uk or at http://www.rdforum.nhs.uk.

Where a NHS organisation's role in the study is limited to identifying and referring potential participants to research sites ("participant identification centre"), guidance should be sought from the R&D office on the information it requires to give permission for this activity.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of management permissions from host organisations.

Registration of Clinical Trials

All clinical trials (defined as the first four categories on the IRAS filter page) must be registered on a publically accessible database. This should be before the first participant is recruited but no later than 6 weeks after recruitment of the first participant.

There is no requirement to separately notify the REC but you should do so at the earliest opportunity e.g. when submitting an amendment. We will audit the registration details as part of the annual progress reporting process.

To ensure transparency in research, we strongly recommend that all research is registered but for non-clinical trials this is not currently mandatory.

If a sponsor wishes to request a deferral for study registration within the required timeframe, they should contact hra.studyregistration@nhs.net. The expectation is that all clinical trials will be registered, however, in exceptional circumstances non registration may be permissible with prior agreement from the HRA. Guidance on where to register is provided on the HRA website.

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

Ethical review of research sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion").

Ethical issues raised, noted and resolved in discussion:

The PR Sub-Committee agreed that this was a well presented study with no material ethical issues.

- **Social or scientific value; scientific design and conduct of the study**

The Committee were content with the value, design and conduct of the study and noted no significant ethical issues.

- **Recruitment arrangements and access to health information, and fair participant selection**

The Committee were content that the exclusion and inclusion criteria are appropriate for the study. The Committee agreed that the recruitment arrangements for the study were satisfactory and noted that participation will have no impact on patients' clinical care.

- **Favourable risk benefit ratio; anticipated benefit/risks for research participants (present and future)**

The Committee noted there is little risk involved in this study and whilst there is no direct benefits the study may aid service improvement, education and evidence base.

The Committee noted no significant ethical issues with the favourable/risk benefit ratio for this study.

- **Care and protection of research participants; respect for potential and enrolled participants' welfare and dignity**

The Committee noted that participants can withdraw from the study at any time. The data collected in the study will be anonymised, encrypted and stored securely on a password protected computer. It was noted that only limited personal details are needed and only the researcher will have access to the data.

The Committee noted no significant ethical issues with the care and protection of participants.

- **Suitability of the applicant and supporting staff**

The Committee are content that the applicant and the supporting staff are suitably qualified to carry out the study. It was noted that the researcher is a specialist radiographer in CT and this may introduce researcher bias, however it was felt that her in-depth knowledge of the field would aid analysis and interpretation of the data.

- **Suitability of research summary**

The Committee agreed that the research summary was suitable and no changes are necessary.

Approved documents

The documents reviewed and approved were:

Document	*Version*	*Date*
Covering letter on headed paper [Cover letter]	1	16 January 2017

Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [University Insurance Certificate]		01 August 2016
Interview schedules or topic guides for participants [Patient interview schedule]	1	01 August 2016
Interview schedules or topic guides for participants [Radiographer interview schedule]	1	01 August 2016
IRAS Application Form [IRAS_Form_24012017]		24 January 2017
IRAS Checklist XML [Checklist_24012017]		24 January 2017
Letters of invitation to participant [Patient expression of interest letter.]	1	01 August 2016
Participant consent form [Radiographer consent form]	1	01 August 2016
Participant consent form [Patient consent form]	1	01 August 2016
Participant information sheet (PIS) [Radiographer information sheet]	1	01 August 2016
Participant information sheet (PIS) [Patient information sheet]	1	01 August 2016
Research protocol or project proposal [Protocol]	1	01 January 2017
Summary CV for Chief Investigator (CI) [Summary CV R Forton]	1	16 January 2017
Summary CV for student [CV R Forton]	1	16 January 2017
Summary CV for supervisor (student research) [Supervisors VC]	1	18 January 2017

Membership of the Proportionate Review Sub-Committee

The members of the Sub-Committee who took part in the review are listed on the attached sheet.

There were no declarations of interest declared for this study.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Reporting requirements

The attached document "After ethical review – guidance for researchers" gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Notification of serious breaches of the protocol
- Progress and safety reports
- Notifying the end of the study

The HRA website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website: http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/

HRA Training

We are pleased to welcome researchers and R&D staff at our training days – see details at http://www.hra.nhs.uk/hra-training/

With the Committee's best wishes for the success of this project.

17/NI/0025	**Please quote this number on all correspondence**

Yours sincerely

Katrina Gear

pp:
Professor Patrick Murphy
Chair

Email: prs@hscni.net

Enclosures:	*List of names and professions of members who took part in the review*
	"After ethical review – guidance for researchers" [SL-AR2]
Copy to:	*Ms Tasmin Holt* *Ms Lisa Chalkley*

HSC REC B

Attendance at PRS Sub-Committee of the REC meeting on 30 January 2017

Committee Members:

Name	*Profession*	*Present*
Mrs Karen Cardwell	Community Pharmacist	Yes
Professor Patrick Murphy	Advisor on Social & Economic Policy	Yes
Dr Seamus O'Brien	Outcomes Manager, Primary Joint Unit	Yes

Also in attendance:

Name	*Position (or reason for attending)*
Mrs Katrina Greer	REC Manager

Appendix 6: Confirmation of Capacity and Capability

[redacted]

Ms Rachael Forton
[redacted]

Please reply to: Research and Development Department
[redacted]

Direct Dial: [redacted]
Internal:

e-mail: [redacted]
Website:

01/03/2017

Dear Ms Forton,

Confirmation of Capacity and Capability

RE: 210173 (09-01-17).

Study Title: An evaluation into the way Patients and Radiographers define, model and experience care in the fast paced high technology environment of Computed Tomography (CT) imaging.

This letter confirms that [redacted] has the capacity and capability to deliver the above referenced study. Please find attached our agreed Statement of Activities as confirmation.

If you wish to discuss further, please do not hesitate to contact me.

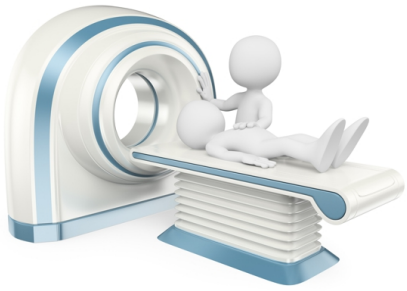
Kind regards

Julie Brown.

pp. Professor Alastair Forbes
Chief of Research and Innovation

Appendix 7: Radiographer Information Sheet

HOW DO RADIOGRAPHERS DEFINE AND MODEL CARE IN THE ENVIRONMENT OF CT?



RADIOGRAPHER INFORMATION.

We would like to invite you to take part in a research study which aims to establish how radiographers define and model care within CT imaging.

You have been invited to join the study because you work in a CT department on a regular basis and have experience of providing care to a large body of patients with both specific and diverse care needs.

Participation in this study is voluntary and entirely your decision.

This is an independent self-funded study. It forms part of a course of study leading to the award of Doctor of Philosophy (PhD) from the University of Bradford. The study will be conducted on a strictly confidential basis and any data collected from you **will not** be shared with your employer, or line managers.

WHAT IS INVOLVED?

If you accept this invitation, you will be asked to attend an interview which will take approximately 1hour of your time. The interview will be recorded using a digital voice recorder and transcribed into text files following the interview.

Before the interview begins you will be given a chance to ask any questions you may have regarding the study and how your information will be used.

If you still wish to take part, you will be asked to complete a consent form to record your agreement.

You can change your mind about taking part in the study at any point. You **do not** have to give a reason. If you choose to leave the study within 2 weeks of your interview, all of your data will be destroyed. If you withdraw after this stage the data will remain in the study, but **no direct quotes** from you will be used.

HOW WILL THE RESULTS BE USED?

The results of the study will form part of a PhD thesis. The results will also be published as research articles, reports or presented at conferences. With your consent, some of the information you provide may be used as anonymous quotes within this work.

WILL MY INFORMATION REMAIN CONFIDENTIAL?

Yes. Your personal details (e.g.name), and consent form will be kept separate from the interview transcript and audio files. All data will be held securely in a locked filling cabinet or on a password protected computer.

Audio recordings and transcripts will be given a unique identification number. The files will then be anonymised. All personal details and interview data will be held for up to 5 years from study completion. After this time all data will be destroyed.

To protect your anonymity, your name and any identifying characteristics will be changed in all written reports, research articles or presentations.

WHAT ARE THE BENEFITS TO TAKING PART?

Your involvement may aid service improvement and increase the quality of the care provided in radiology departments.

You will also be contributing to the radiology evidence base focusing on patient care.

ARE THERE ANY RISKS INVOLVED?

Involvement in this study will pose no direct risk to you and your practice is not being questioned. However, the disclosure of any information which is considered to indicate risk or harm to patients, the public, other staff, or the organisation, will be discussed with academic supervisors and reported to the trust.

We understand that you may feel exposed during an interview of this nature. If this happens or you feel uncomfortable and **do not** wish to continue, you **can pause or stop** the interview at any point.

STUDY APPROVAL.

To protect your interests all research undertaken in the NHS is reviewed by an independent Research Ethics Committee.

This study (IRAS ID 210173) has been approved by:

HRA Research Ethics Committee ref: 17/NI/0025 on 08/02/2017

The study is funded by Rachael Forton who is studying for the award of Doctor of Philosophy (PhD) at the University of Bradford.

WHO DO I CONTACT IF I HAVE ANY CONCERNS OR QUERIES?

If you have any queries, concerns or complaints about anything to do with the study, please contact:

Rachael Forton (Primary Researcher)

rkforton@student.bradford.ac.uk

Maryann Hardy (Academic Supervisor)

Professor of Radiography & Imaging Practice Research
Faculty of Health Studies
University of Bradford
Richmond Road
Bradford
BD7 1DP.

m.l.hardy1@bradford.ac.uk

01274 236578

Appendix 8: Patient Invite Letter

Rachael Forton
Specialist CT Radiographer/PhD Student
rkforton@student.bradford.ac.uk
HCPC Registration No RA35894.

Dear Patient,

We are currently undertaking an evaluation of the care provided to patients during their CT scan at the [Host Trust], and are looking for volunteers to take part in the study.

In order to gather information directly from patients, we are looking for volunteers who would be willing to take part in an interview. Participants will be asked to talk about their experience of having a CT scan, and the care they received during the procedure.

If you are interested in taking part, or would like further information regarding the study, please complete the form below and hand it to the receptionist when you attend for your scan.

Kind Regards

Rachael Forton

Lead Researcher.

Expression of interest form.

I …… (please insert name)

would like to be contacted regarding the above study.

Please complete details of your preferred means of contact:

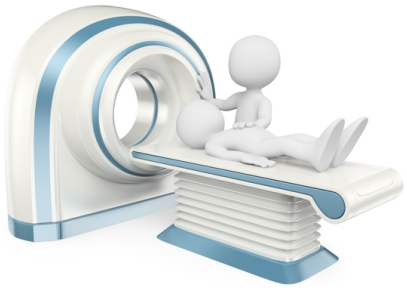
Telephone: _____

Email: _____

(Your personal information and contact details will be held securely, and only viewed by the lead researcher).

Appendix 9: Patient Information Sheet

HOW DO RADIOGRAPHERS DEFINE AND MODEL CARE IN THE ENVIRONMENT OF CT?



RADIOGRAPHER INFORMATION.

We would like to invite you to take part in a research study which aims to establish how radiographers define and model care within CT imaging.

You have been invited to join the study because you work in a CT department on a regular basis and have experience of providing care to a large body of patients with both specific and diverse care needs.

Participation in this study is voluntary and entirely your decision.

This is an independent self-funded study. It forms part of a course of study leading to the award of Doctor of Philosophy (PhD) from the University of Bradford. The study will be conducted on a strictly confidential basis and any data collected from you **will not** be shared with your employer, or line managers.

WHAT IS INVOLVED?

If you accept this invitation, you will be asked to attend an interview which will take approximately 1hour of your time. The interview will be recorded using a digital voice recorder and transcribed into text files following the interview.

Before the interview begins you will be given a chance to ask any questions you may have regarding the study and how your information will be used.

If you still wish to take part, you will be asked to complete a consent form to record your agreement.

You can change your mind about taking part in the study at any point. You **do not** have to give a reason. If you choose to leave the study within 2 weeks of your interview, all of your data will be destroyed. If you withdraw after this stage the data will remain in the study, but **no direct quotes** from you will be used.

HOW WILL THE RESULTS BE USED?

The results of the study will form part of a PhD thesis. The results will also be published as research articles, reports or presented at conferences. With your consent, some of the information you provide may be used as anonymous quotes within this work.

WILL MY INFORMATION REMAIN CONFIDENTIAL?

Yes. Your personal details (e.g.name), and consent form will be kept separate from the interview transcript and audio files. All data will be held securely in a locked filling cabinet or on a password protected computer.

Audio recordings and transcripts will be given a unique identification number. The files will then be anonymised. All personal details and interview data will be held for up to 5 years from study completion. After this time all data will be destroyed.

To protect your anonymity, your name and any identifying characteristics will be changed in all written reports, research articles or presentations.

WHAT ARE THE BENEFITS TO TAKING PART?

Your involvement may aid service improvement and increase the quality of the care provided in radiology departments.

You will also be contributing to the radiology evidence base focusing on patient care.

ARE THERE ANY RISKS INVOLVED?

Involvement in this study will pose no direct risk to you and your practice is not being questioned. However, the disclosure of any information which is considered to indicate risk or harm to patients, the public, other staff, or the organisation, will be discussed with academic supervisors and reported to the trust.

We understand that you may feel exposed during an interview of this nature. If this happens or you feel uncomfortable and **do not** wish to continue, you **can pause or stop** the interview at any point.

STUDY APPROVAL.

To protect your interests all research undertaken in the NHS is reviewed by an independent Research Ethics Committee.

This study (IRAS ID 210173) has been approved by:

HRA Research Ethics Committee ref: 17/NI/0025 on 08/02/2017

The study is funded by Rachael Forton who is studying for the award of Doctor of Philosophy (PhD) at the University of Bradford.

WHO DO I CONTACT IF I HAVE ANY CONCERNS OR QUERIES?

If you have any queries, concerns or complaints about anything to do with the study, please contact:

Rachael Forton (Primary Researcher)

rkforton@student.bradford.ac.uk

Maryann Hardy (Academic Supervisor)

Professor of Radiography & Imaging Practice Research
Faculty of Health Studies
University of Bradford
Richmond Road
Bradford
BD7 1DP.

m.l.hardy1@bradford.ac.uk

01274 236578

Appendix 10: Radiographer Consent Form

Study Title: How do Radiographers define and model care during CT examinations?

Primary Researcher: Rachael Forton (PhD Student, Faculty of Health Studies, University of Bradford) HCPC registration no: RA35894.

Participant Identification Number:

Please Read.	Please Initial.
I confirm that I have read the information sheet dated .....version… for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.	
I understand that my participation is voluntary, and that I am free to withdraw at any time without giving any reason, without my professional or legal rights being affected.	
I understand that the information I provide will be held securely and confidentially, and that the interview data I provide will be completely anonymised.	
I understand that the interview will be recorded using a portable voice recorder and transcribed by the researcher or an independent transcriber. Transcription will not take place until 2 weeks after my interview to allow sufficient time for me to withdraw my data from the study should I choose to do so. I understand that if I withdraw after this time my data will remain in the study but no direct quotes from me will be used in any resultant work.	
I understand that I am free to ask questions at any time before, during and after the interview. If I experience any distress or discomfort during the interview, recording will be suspended at my request and my concerns can be discussed with the above-named researcher.	
I agree to allow my anonymised quotes to be used in reports, publications and presentations. I understand that my identifying characteristics will be changed to prevent disclosure of my identity within this work.	
I would like to be given the opportunity review any work that is considered for publication prior to submission.	
I understand that all data collected and personal information about me will be held securely in a locked filling cabinet or on a password protected computer for up to 5 years from the completion of the study. After this time, all data will be destroyed.	

I, …… **(Name of Participant)**

Consent to participate in the study entitled: **How do radiographers define and model care within the environment of CT?**

Signature: _____ **Date:** _____

Person Obtaining Consent:

Signature: _____ **Date:** _____

Appendix 11: Patient Consent Form

Study Title: How do patients define and experience care during CT examinations?

Primary Researcher: Rachael Forton (PhD Student, Faculty of Health Studies, University of Bradford) HCPC registration no: RA35894.

Participant Identification Number:

Please Read.	Please Initial.
I confirm that I have read the information sheet dated .....version… for the above study. I have had the opportunity to consider the information, ask questions, and have had these answered satisfactorily.	
I understand that my participation is voluntary, and that I am free to withdraw at any time without giving any reason, without my medical care or legal rights being affected.	
I understand that any information I provide will be held securely and confidentially, and that the interview data I provide will be completely anonymised.	
I understand that the interview will be recorded using a portable voice recorder and transcribed by the researcher or an independent transcriber. Transcription will not take place until 2 weeks after my interview to allow sufficient time for me to withdraw my data from the study should I choose to do so. I understand that if I withdraw after this time my data will remain in the study, but no direct quotes from me will be used in any resultant work.	
I understand that I am free to ask questions at any time before, during and after the interview. If I experience any distress or discomfort during the interview, recording will be suspended at my request and my concerns can be discussed with the above named researcher.	
I agree to allow my anonymised quotes to be used in reports, publications and presentations. I understand that my identifying characteristics will be changed to prevent disclosure of my identity within this work.	
I understand that all collected data and personal information about me will be held securely in a locked filling cabinet or on a password protected computer for up to 5 years after the completion of the study. After this time all data will be destroyed.	
I would like to request a summary of the findings on completion of the study.	

I, …… (Name of Participant)

Consent to participate in the study entitled: **How do patients define and experience care during a CT scan?**

Signature: _____ **Date:** _____

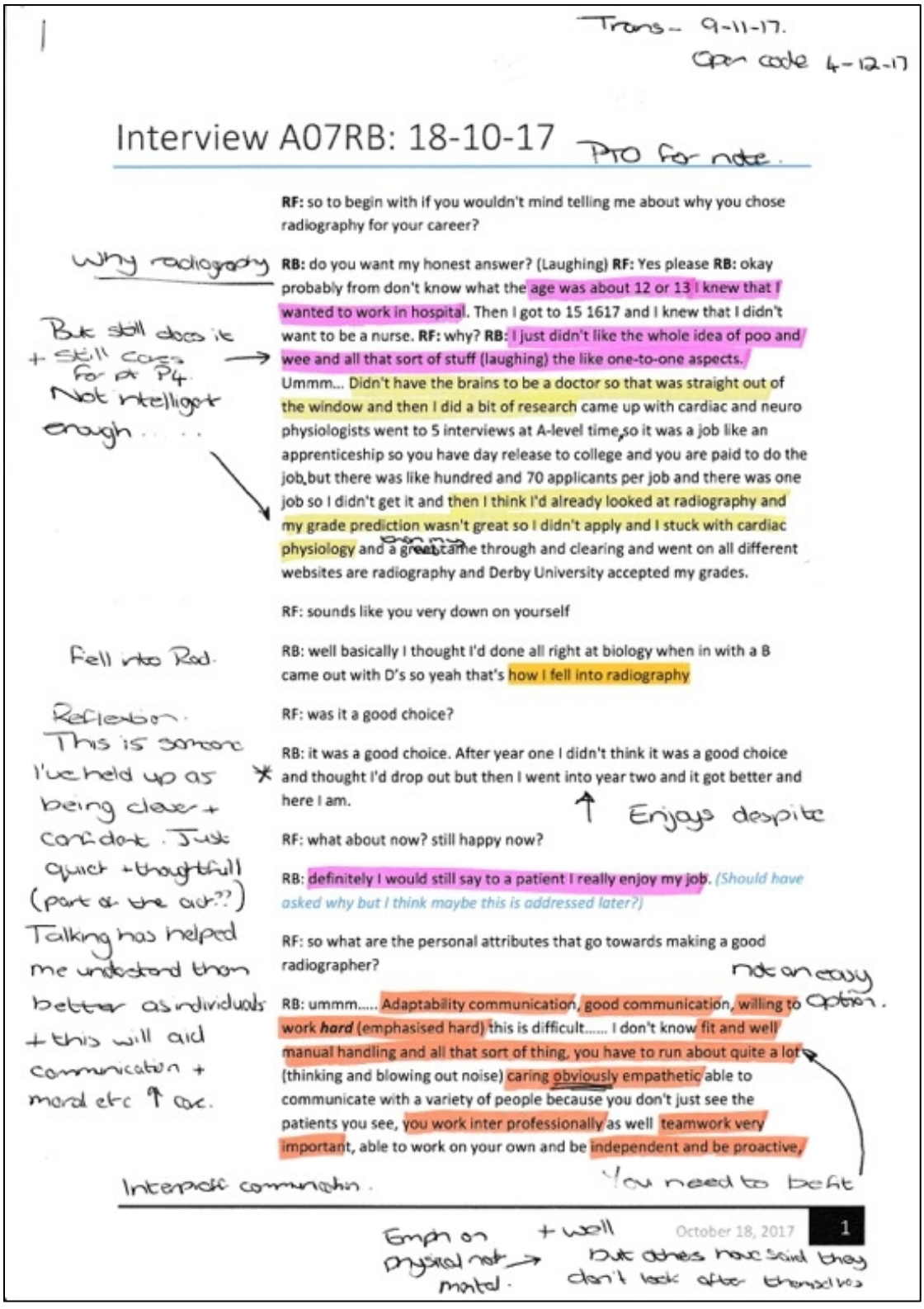
Person Obtaining Consent:

Signature: _____ **Date:** _____

Appendix 12. Limited overview of participant demographics.

Participant Group	Gender		Age (Yrs.)			No. of scans			
	M	F	30-40	40-50	50+	1	2-3	4-5	5+
Patient	1	5	2	1	3	1	3	1	1
	Gender		Age (Yrs.)			Years of CT experience			
	M	F	20-30	30-40	40-50	50+	0-5	5-10	10-20	20+
Radiographer	2	8	2	3	3	2	2	3	3	2
	NB: It must be made explicit that radiographer age does not directly correlate to years of experience. Age, gender and years of experience have been purposely separated to mitigate the risk of deductive disclosure (Kaiser 2012: 457).									

Appendix 13: Example of a Working Transcript



Trans – 9-11-17.
Open code 4-12-17

Interview A07RB: 18-10-17 PTO for note.

RF: so to begin with if you wouldn't mind telling me about why you chose radiography for your career?

Why radiography

RB: do you want my honest answer? (Laughing) **RF:** Yes please **RB:** okay probably from don't know what the age was about 12 or 13 I knew that I wanted to work in hospital. Then I got to 15 1617 and I knew that I didn't want to be a nurse. **RF:** why? **RB:** I just didn't like the whole idea of poo and wee and all that sort of stuff (laughing) the like one-to-one aspects. Ummm... Didn't have the brains to be a doctor so that was straight out of the window and then I did a bit of research came up with cardiac and neuro physiologists went to 5 interviews at A-level time,so it was a job like an apprenticeship so you have day release to college and you are paid to do the job,but there was like hundred and 70 applicants per job and there was one job so I didn't get it and then I think I'd already looked at radiography and my grade prediction wasn't great so I didn't apply and I stuck with cardiac physiology and a great came through and clearing and went on all different websites are radiography and Derby University accepted my grades.

But still does it + still cares for pt P4. Not intelligent enough . . . .

RF: sounds like you very down on yourself

Fell into Rad.

RB: well basically I thought I'd done all right at biology when in with a B came out with D's so yeah that's how I fell into radiography

Reflexion. This is someone I've held up as being clever + confident. Just quiet + thoughtfull (part of the act??) Talking has helped me understand them better as individuals + this will aid communication + moral etc ↑ etc.

RF: was it a good choice?

RB: it was a good choice. After year one I didn't think it was a good choice and thought I'd drop out but then I went into year two and it got better and here I am.

↑ Enjoys despite

RF: what about now? still happy now?

RB: definitely I would still say to a patient I really enjoy my job. *(Should have asked why but I think maybe this is addressed later?)*

RF: so what are the personal attributes that go towards making a good radiographer?

not an easy option.

RB: ummm..... Adaptability communication, good communication, willing to work ***hard*** (emphasised hard) this is difficult..... I don't know fit and well manual handling and all that sort of thing, you have to run about quite a lot (thinking and blowing out noise) caring obviously empathetic able to communicate with a variety of people because you don't just see the patients you see, you work inter professionally as well teamwork very important, able to work on your own and be independent and be proactive,

You need to be fit

Interpers communicn.

Emph on physical not mental. → + well but others have said they don't look after themselves

you need to work safely and know what you're doing and just going through everything on a daily basis I would normally do.

RF: so you say you need to be caring you mean by that?

RB: I knew this was coming up, I sat there thinking this morning I thought "what does caring mean to me?" *(This is showing that the project is stimulating reflection and self-questioning which can only be beneficial to practice).* (long pause and thinking) Are we talking for just the patient or just around?

RF: let's go for just general what does care mean?

RB: (silence thinking) RF: it is a difficult thing to define RB: it is... To care for someone? Is to..... Well I'm just gonna say other words now aren't I? To look after, understand what someone's going through and be able to adapt your skills so that you can give them the best treatment or the best experience or be able to make them better in a small way even if it is just a small way. We are in radiology we don't cure patients you you are part of a treatment process that they have to come and see you as part of that treatment process so you are one of the... ***Carers*** (kind of emphasised word almost an element of realisation) at some point and their under your... I can't sit without saying the word care ummm errr hmmm.

RF: okay so you say you're part of the care process what you think the scan means that the patient?

RB: it depends what they going through. If it is a... The point where they've been to the GP they've had a variety of tests and the GP says I want to send you for a scan because I can't work out what's going on and at that point they think that something bad going on maybe? So they come to you all negative some things can happen at the end of this can I'm going to be told I've got cancer or something like that... That's generally what people tend to think isn't it? So what does it show at the end of it? I can't tell you anything results go back to your GP blardy blardy blar.... But when they're in the room you've got to talk them through in a positive way I would say that there might not be anything wrong with them at all but this is one of the tests that they do to rule things out *(emphasising it's the way that you say something or interact with someone that affects action and interaction. There is a definite recognition from radiographers that the interaction between the patient and the radiographer will affect the way the person constructs the scan and the experience of having a scan on the care they received)* er... Sorry can you just repeat the actual start (laughing)

RF: it was what does the scan means the patient?

RB: sorry I'm just not very good at getting the words across think I have some kind of not dyslexia but the word I want is never there. *(This important*

to note because it highlights why more prompting and re-addressing the questions has occurred)

Ermm arrrrr... **RF:** do you think the scan is important to them?

RB: For most people I would say it's very important because it can change their way of life shall we say.

RF: and do you think they see you as a radiographer as being important?

RB: I would say most people probably not. Were not well known in our profession really and nobody... When they come... People don't... Unless people know and like have some background information on us they don't really know what they have come for or what to expect so for example the other day a lady came in she thought she was having... A scan to them is a scan. They don't understand that there are five different types of scan or an x-ray is not a scan so they come in thinking it's one thing and then realising it's probably not as bad as I thought... And they go out thinking oh that wasn't too bad. And probably I don't know some people may think about the results but some people may just think oh that wasn't too bad, so I'll not worry about it sort of thing

RF: would it surprise you if I said that the people I've interviewed have said that at that moment in time the radiographer is the most important person in their care pathway and are placing the radiographer quite highly in the care process?

RB: that does surprise me. I would say (exhales whilst thinking) 30% will actually say when you're in the room you know you're doing a really good job I'm really appreciative of your care and what you doing bardy blardy bla whereas most people just come in and go out *(but that doesn't mean they don't appreciate it)* (After thinking about it) it is interesting very interesting in fact.

RF: so does it bother you when you get called nurse?

RB: sometimes RF: why?

RB: because I'm not a nurse (laughing) I've not been trained as a nurse I do a very different job to nurse and I don't know I guess there is I don't know nurses never get called radiographers. Nursing are 90% of the staff probably to most people out there where as radiographers and physios are smaller people within that trust or job whatever.

RF: it's okay I feel the same I'm not judging you. I don't really know why because if you think about it the nurses do a good job so to get defensive is almost insulting them.

Hidden self-
But it reads themselves say "not clever enough" etc. Believe patients don't think they are clever Proud of there training etc.

RB: I think it annoys me most because... I do... What does annoy me most?... (Long pause) I feel like we're not looked down upon but people ask you know so what do you do to get this job and they don't realise that it's a three-year degree whereas nursing is a degree or used to be a diploma they just think I don't know they think you just get the job and you just press the button and that's it.

RF: as I said they do seem to value you.

RB: I think it's more to do with not necessarily the patient but people within the hospital. — But don't provide ourselves.

RF: what you think about the radiographer radiologist relationship?

RB: hummmm.... Depends I think it depends where you work within radiology. Think within CT I would say it's pretty good.

Protocol based care.

RF: what about the expectations of what each other does?

Teaching hospital ↓ radiographer opportunities.

RB: well those rules and guidelines they do that job and we do this job. I think the problem could be more collaboration more support from the radiologists but I think within this trust because we are a teaching hospital I don't feel that the radiographers get as much errr..... Chance to progress as what they do, because because they've got to learn and if we take their jobs of them what are they going to do?

Self-Collaboration ↓ Link to role blur Statement.

RF: what about the consultants?

SI perspective Very defensive over roles + jobs.

RB: while they properly feel like they've done six years plus you know whatever is training to be a radiologist and we've done what three years the degree and we want to be doing their job?

RF: do you think it's the same kind of thing you know like we don't like being called nurses?

Defensive over being called nurse

RB: No I think it's because we don't do a job thats anything like there's we just wear a uniform like a nurses. Because I wouldn't want to do their job and they wouldn't want to do my job. Whereas I'd quite like to do some of the consultants job.

So am I, am I influencing this too much. Is it actually real to me???

RF: are there elements of the nurse's job that you have to do?

Transient Coc appeals

RB: yes like caring for the patient. I think it's more the one-on-one situation we'll see a patient andwe may not see that patient for another three months or ever again in our lives whereas you are an award and you're looking after that patient or for patients or 12 patients in your bay and you're with them for however longer in hospital and you are going to form some sort of relationship with that patient and it's going to be very different to what I would form with the patient over a 20 minute appointment slot.

Relationship building

"20mins to make your mark"

Relationship building *

But... RF: is it the detachment you like? RB: I do like the detachment but... I also enjoy the communication with that patient in that 20 minute slot. Because you got 20 minutes to make your mark. Whereas a nurse may be as five days and over that period someone is going to although you shouldn't make a judgement on the way you work and how you care for your patience and how you communicate and whether or not you've done a good job or a rubbish job.

RF: do you think it's a natural skill?

* Self.?

Skills grow ē time + exp.

RB: I think there's an element to it but I think it's something that experience gives you. Because I've come a long way from the first year of being a radiographer till now. Because I nearly quit radiography because I couldn't communicate with the patient that's why nearly quit.

Instinctive bit

RF: so what happened that made you change your mind?

Don't need to be naturally confident. exp brings change kp WT JG Link ē personal attributes.

RB: it's time and confidence I think. Naturally I'm not the world's most confident person but if I'm comfortable in my environment and comfortable in my job uncomfortable with what I'm doing and I can control it therefore a more confident.

RF: other people help you to get that confidence?

RB: definitely, it wasn't one specific person it was more of a being put into situations where you may be had to be a bit more confident and therefore you thought oh well I've done it once so I can do it again and it builds from there. Mirrored ē pt accounts

RF: so was that set up as a structured mentorship program?

RB: no was just working with people and moving out of your comfort zone.

Emotional aspects. Park it + move on. Dealing with bad stuff is part a job. } KPS WT

RF: along the lines of detachment you do see a lot of really bad things one after the other sometimes how do you think that affects you as a person?

RB: (Long pause) I wouldn't say it doesn't affect me because it does affect me but I would say... That I'm pretty good... At just just letting it wash over a little. Whereas other things will affect me... It is part of the job and that's what I signed up for I knew that from the very beginning... I guess if you had a lot in a row it would take its toll but... I found a way to deal with it I think. I just talk. It is not normal for me but if I got something on my mind this that you know that what happened I just tell someone.

* Self.

Talking doesn't come naturally

RF: do you mind me asking he'd talk to? Is it external to here?

Support @ home but what about those who haven't.

RB: external erm... Internal if the other person wasn't there or home. Normally at home I go home and I'm like Right get it all out and that's it I'm fine. But that's just how I deal with I think.

RF: do you think it sustainable? You quite early on in your career.

RB: yeah ummmmm..... (really Long pause) RF: do you think were set up to deal with?

Can't teach it

RB: ummmm..... (another long pause) I don't know if we set up to deal with it as such, it's not like you have a lecture on how to deal with situations like you know someone arrests on the scanner or you have to do CPR I don't think you set up to deal with the aftermath, your setup to know what to do in the situation, and yes well I don't think they're very good doing the debrief.

Deal ē emergency but not supported after.

RF: do you think we are cared about?

Team support.

RB: with in the team yes like within the CT team yes but I wouldn't... I don't know it was strange the other night because someone arrested on the scanner and one of the nurses came back round and she was like in tears and we just kind of discussed it and carried on sort of thing but that is the only time someone from another profession has come back to discuss what's happened. They just leave and no one really explains or... You never get like what happened afterwards do you know what I mean? Because if I'd have gone home that night I would never have known what happened whereas I went round to rhesus and I spoke to the nurses who were on who are currently leaving so yeah. I think that I felt that I wanted a bit of closure I think. Because I would have gone home and thought like I wonder what happened to her. But maybe we are looked upon as being not on the outside but on the fringe of a situation, whereas we're not in there you know saving the patient's life as such. PTO to back page.

But @ night when team not there forgotten about.

Care about people. They want to know what happens get closer.

RF: do you think they presume that we just okay?

RB: I think so

RF: are we?

RB: I dont think so. (really quick answer)

RF: can you elaborate?

Caring for carers

RB: well like I say everyone deals with these things in different ways and I may have found that it works for me now but I don't know in 20 years time if I've experienced X number of situations whether I'm still going to deal with the same if there's still no support. Lack of support.

RF: do you notice a difference in the older members of staff when it comes to caring?

RB: I think there's a difference. I wouldn't say it was either negative or positive I think it's just a different way and maybe the new ways don't come easy.

RF: when you see a new way what you mean?

I'm Confused.

RB: well we obviously trained in different eras that timescale had different views on things for example you had your matron which were very like (points bangs thing on table) you know I mean? Whereas I still think we have now but I think were a lot more what's the word like... For example I know (says manager's name) the hierarchy there is still there but within the I think maybe the aim was to take the hierarchy, you know like when the big boss walks into the room and you know he's the boss you know everyone is not equal on different people have different responsibilities but it's trying to maintain that human level if that makes sense and I can't remember while talking about now.

RF: we were talking about the older generation. The reason I'm asking is because there may be a perception that you the longer you do the job the lesser seen as being caring.

everyone cracks v38.

RB: I think it could go either way. You can either go blasé its just happening I've done this for 40 years what ever or over or you can take it all on board and have a bit of a breakdown and there's no in between.

RF: it's come up that maybe the coldness is due to self-preservation

Self preservation

RB: I can see how that would happen, yeah I think the more you deal with people the more you yeah I think you do put up a bit of a barrier don't you. But then does it take something to happen to break that barrier down, to realise that maybe you have been a bit blasé about these things but it shouldn't have to happen.

Fire along goes off building is evacuated and we were just getting to the juicy stuff.

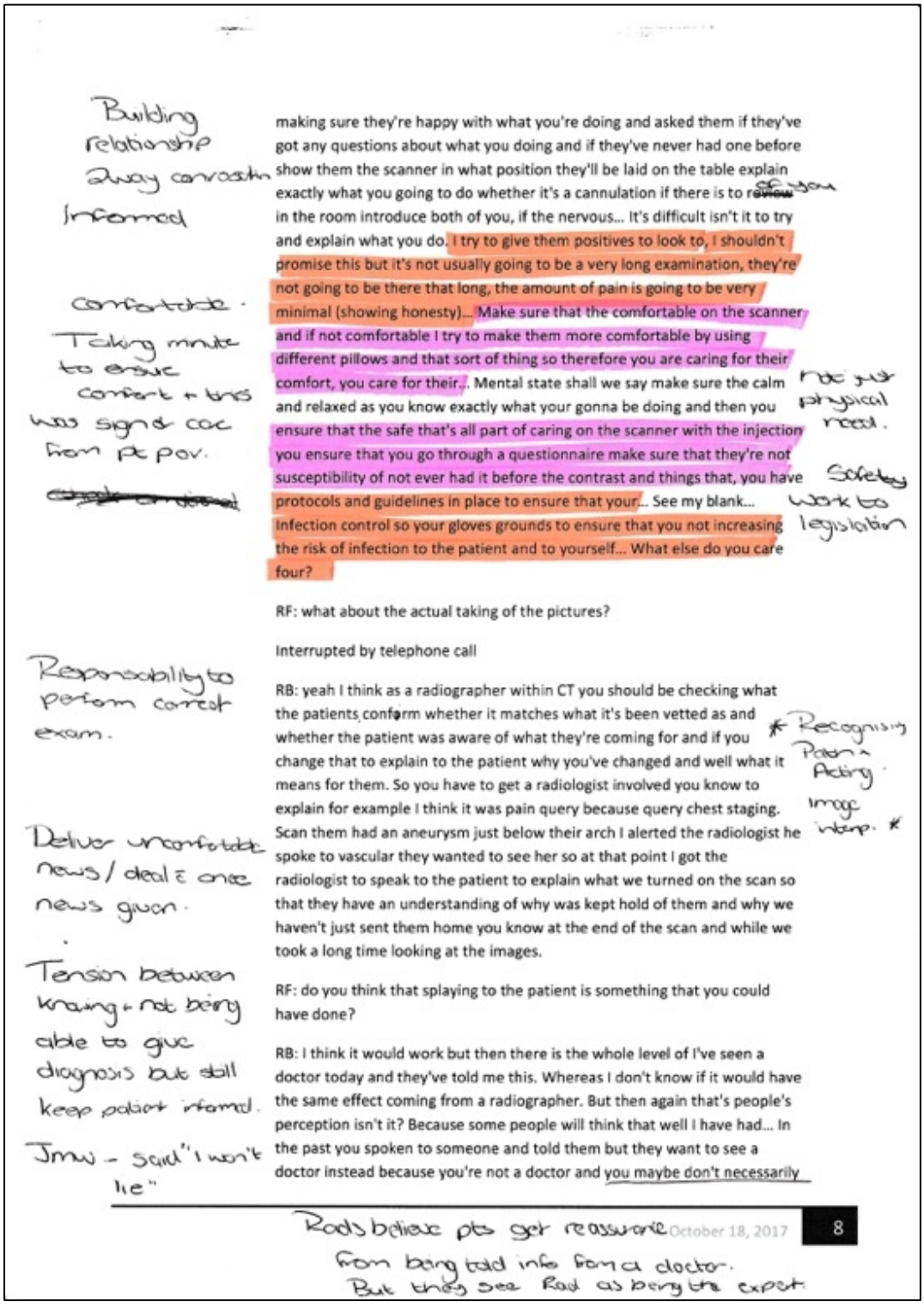
RF: okay I'm not sure where we were but can you tell me what you do during a CT scan that constitutes his care?

Respectful.

Explain what you would like to do not tell what you are going to do. Consent

RB: so... Let's go through the average examination... I'm just gonna talk it through to use I know said. So you can collect your patient from the waiting room introduce yourself so they know who they're dealing with, explain what you would like to do, and if there an inpatient I usually try to gain some kind of consent you know yes that's fine, so take them through some kind of consent to take them in the room basically. Outpatients are there because of chosen to be there for the scans as far as I'm concerned. Bring them into the room. I suppose as lots of elements of care really. There's just different ways of looking at it so explaining what you would like to do and

Reproved.



Building relationship away can vocalise informed

making sure they're happy with what you're doing and asked them if they've got any questions about what you doing and if they've never had one before show them the scanner in what position they'll be laid on the table explain exactly what you going to do whether it's a cannulation if there is to review in the room introduce both of you, if the nervous... It's difficult isn't it to try and explain what you do. I try to give them positives to look to, I shouldn't promise this but it's not usually going to be a very long examination, they're not going to be there that long, the amount of pain is going to be very minimal (showing honesty)... Make sure that the comfortable on the scanner and if not comfortable I try to make them more comfortable by using different pillows and that sort of thing so therefore you are caring for their comfort, you care for their... Mental state shall we say make sure the calm and relaxed as you know exactly what your gonna be doing and then you ensure that the safe that's all part of caring on the scanner with the injection you ensure that you go through a questionnaire make sure that they're not susceptibility of not ever had it before the contrast and things that, you have protocols and guidelines in place to ensure that your... See my blank... Infection control so your gloves grounds to ensure that you not increasing the risk of infection to the patient and to yourself... What else do you care four?

comfortable. Taking minute to ensure comfort + this was sign of CoC from pt pov.

not just physical need.

Safety work to legislation

RF: what about the actual taking of the pictures?

Interrupted by telephone call

Responsibility to perform correct exam.

RB: yeah I think as a radiographer within CT you should be checking what the patients conform whether it matches what it's been vetted as and whether the patient was aware of what they're coming for and if you change that to explain to the patient why you've changed and well what it means for them. So you have to get a radiologist involved you know to explain for example I think it was pain query because query chest staging. Scan them had an aneurysm just below their arch I alerted the radiologist he spoke to vascular they wanted to see her so at that point I got the radiologist to speak to the patient to explain what we turned on the scan so that they have an understanding of why was kept hold of them and why we haven't just sent them home you know at the end of the scan and while we took a long time looking at the images.

* Recognising Pain + Acting. Image interp. *

Deliver uncomfortable news / deal ε once news given.

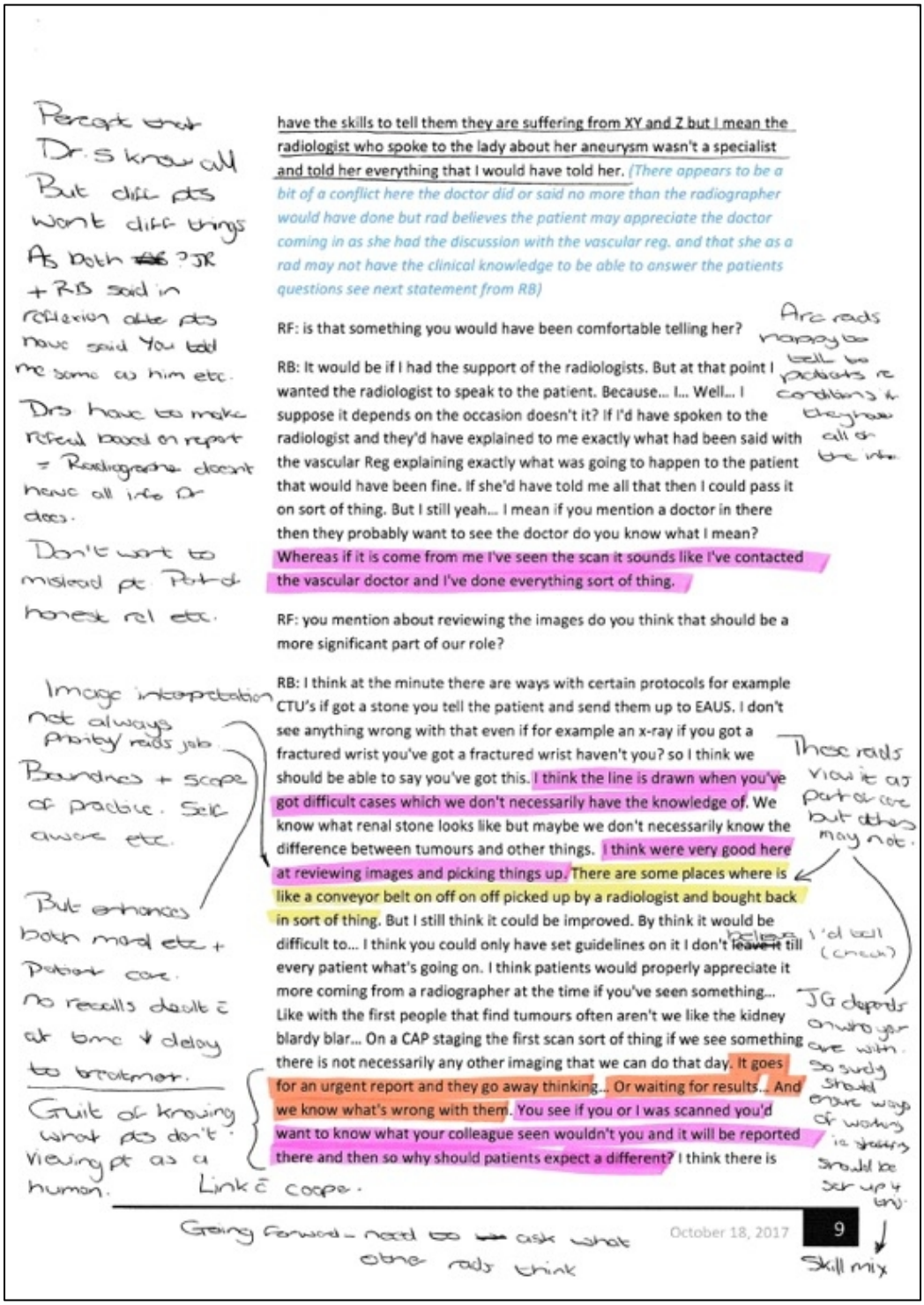
Tension between knowing + not being able to give diagnosis but still keep patient informed.

RF: do you think that splaying to the patient is something that you could have done?

JMW - said "I won't lie"

RB: I think it would work but then there is the whole level of I've seen a doctor today and they've told me this. Whereas I don't know if it would have the same effect coming from a radiographer. But then again that's people's perception isn't it? Because some people will think that well I have had... In the past you spoken to someone and told them but they want to see a doctor instead because you're not a doctor and you maybe don't necessarily

Rads believe pts get reassurance from being told info from a doctor. But they see Rad as being the expert



have the skills to tell them they are suffering from XY and Z but I mean the radiologist who spoke to the lady about her aneurysm wasn't a specialist and told her everything that I would have told her. *(There appears to be a bit of a conflict here the doctor did or said no more than the radiographer would have done but rad believes the patient may appreciate the doctor coming in as she had the discussion with the vascular reg. and that she as a rad may not have the clinical knowledge to be able to answer the patients questions see next statement from RB)*

RF: is that something you would have been comfortable telling her?

RB: It would be if I had the support of the radiologists. But at that point I wanted the radiologist to speak to the patient. Because... I... Well... I suppose it depends on the occasion doesn't it? If I'd have spoken to the radiologist and they'd have explained to me exactly what had been said with the vascular Reg explaining exactly what was going to happen to the patient that would have been fine. If she'd have told me all that then I could pass it on sort of thing. But I still yeah... I mean if you mention a doctor in there then they probably want to see the doctor do you know what I mean? Whereas if it is come from me I've seen the scan it sounds like I've contacted the vascular doctor and I've done everything sort of thing.

RF: you mention about reviewing the images do you think that should be a more significant part of our role?

RB: I think at the minute there are ways with certain protocols for example CTU's if got a stone you tell the patient and send them up to EAUS. I don't see anything wrong with that even if for example an x-ray if you got a fractured wrist you've got a fractured wrist haven't you? so I think we should be able to say you've got this. I think the line is drawn when you've got difficult cases which we don't necessarily have the knowledge of. We know what renal stone looks like but maybe we don't necessarily know the difference between tumours and other things. I think were very good here at reviewing images and picking things up. There are some places where is like a conveyor belt on off on off picked up by a radiologist and bought back in sort of thing. But I still think it could be improved. By think it would be difficult to... I think you could only have set guidelines on it I don't leave it till every patient what's going on. I think patients would properly appreciate it more coming from a radiographer at the time if you've seen something... Like with the first people that find tumours often aren't we like the kidney blardy blar... On a CAP staging the first scan sort of thing if we see something there is not necessarily any other imaging that we can do that day. It goes for an urgent report and they go away thinking... Or waiting for results... And we know what's wrong with them. You see if you or I was scanned you'd want to know what your colleague seen wouldn't you and it will be reported there and then so why should patients expect a different? I think there is

Taking Radiologist job. But shortage = only option.

Link to paper about taking role burdens. Too much up on bitmes + does it could be care.

definately

~~deathly~~ potential but then you're back on the taking the radiologists job away.

RF: but it goes down to what constitutes normal care if you think about cannulation that never used to be part of normal care but it is now normal.

RB: yes but at the minute most of it is about experience about what you've learnt over the last five years of scanning people and then going to the radiologist. I don't think not many people Will, if they see something will see it and it will just let it pass over I don't think they look into what the report said or ask what is, you know sometimes I see something and I don't necessarily need to do anything more for the patient scan wise but I'm intrigued to know from my own knowledge what is. But there are consultant radiographers now. You know if you got a broken wrist they tell you sort of thing and you don't have to go back round to a need to see a nurse and doctors and then be told... But then could that work for CT? I don't know. You got to think about the bigger picture but I think it could be you could have a one-stop clinic. Reads have ideas but managed focus on getting scans done.

Self learning

Team as what is imp in learning → role ext.

Should not be a given but room for specialist roles.

Link to Chat burns on Sepsis.

RF: do you think along those lines that were able to deal with patients that are coming for their first line scans all have been told the terminal illness? do you think we forgot about as far as education goes with that kind of subject?

Room for IPL @ post grad level.

RB: possibly yes because we see so many different patients I don't think we get... Obviously there are training things for dementia and all of that there are training things that go on.... By one of necessarily said that palliative care would come and just speak these are my experiences here's some tips and hints of how to deal with these sorts of patients we don't get anything like that really do we?

RF: do you think it would be helpful?

RB:err... I think so because I don't think we deal well with the emotional side of things do we.

Recognised role as 'a disease but as a person ē emotional + physical need. Care about people + the person

Link to VSB. Do realise impact but at that point this pt comes 1st.

RF: could you elaborate for me?

RB: well you ~~our~~ are cut short because you only have... There's pros and cons of having the 20 minute appointment you got 20 minutes yes what I said before about making your mark you know but you've also ***only*** got 20 minutes to deal with patients who our suffering from cancer but at the same time are suffering mentally with dealing with it and sometimes you might be the only person that they have spoken to in the last month that knows what's going on. So I don't think that ~~was~~ we're set up that way but then I think you have got to spend the time with them. Which means you run behind but at the same time you've shown empathy care and support for that patient at that point in time and in that situation.

RF: what is the impact of technology on the care that you feel you are able to provide?

RB: technology 10 years ago a head scan would have taken the full appointment time to do a head scan now it's 10 seconds. Therefore you reduce the appointment time by 99%.

RF: but would you have been without patient for that time?

RB: no because you would have been scanning them.

RF: yes but that means they're left on their own for longer.

RB: yes so in terms of that that's improved but then we've cut the... You still have the same space either end... With cut that down but at the same time we've cut the before and after elements as well.

RF: what about the actual impact of technology on your role you think that's changing?

RB: (Long pause) it depends what you make of it though doesn't it because yes I could be seen as just pushing buttons Rather than thinking at every single scan what KV and what MAS I'm going to give so I get a diagnostic picture and that's something I think you properly don't think about any more. But then have we progressed and what we are imaging and what we are looking at and how we are interpreting it? Do we have more time to do that th than back in the day? for example when you when you were in the dark... I never did this because I'm too young but the darkroom you printed off in image made sure it looked all right and then send it maybe?

RF: Well as far as I remember you sent the images you wanted to the printer and had to wait 20mins for it to come out.

RB: so yeah what was happening in the 20mins? Waiting to see the images.

RF: arh but the radiologist sat at the scanners and reviewed everything.

RB: Oh yeah.

RF: So yes technically it will have an impact on us you know it could be that patients come into the room press a button you know watch a video get on the scanner.

RF: how does that make you feel as a skilled professional?

RB: well I could be out of a job can I (laughing) but if it breaks down there won't be anyone to do it.

RF: so how do you see the future of patient care in CT?

Interaction ∈ the technology

Image review interpretation

Radiologist no longer sat @ side of scanner opens up way for radiographic review which includes image interpretation

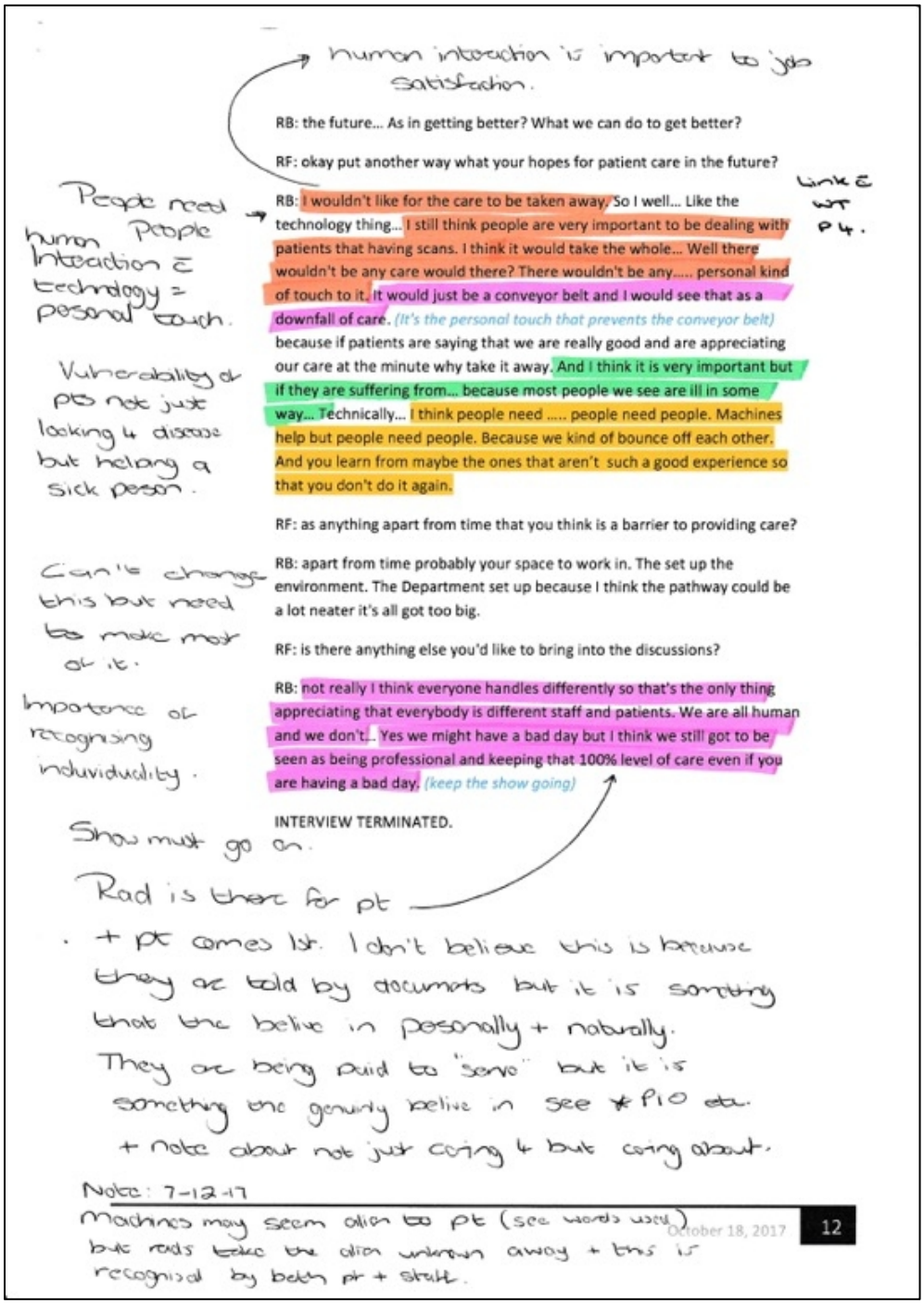
HCP - say radiographer interest but ? actual responsibility

Future - Shows concern over own role in CT ∈ tech taking over.

acknowledges → already going (Link to WT)

Still need human to operate it but this could be an engineer.

PTO



human interaction is important to job satisfaction.

RB: the future... As in getting better? What we can do to get better?

RF: okay put another way what your hopes for patient care in the future?

People need human interaction & technology = personal touch.

RB: I wouldn't like for the care to be taken away. So I well... Like the technology thing... I still think people are very important to be dealing with patients that having scans. I think it would take the whole... Well there wouldn't be any care would there? There wouldn't be any..... personal kind of touch to it. It would just be a conveyor belt and I would see that as a downfall of care. *(It's the personal touch that prevents the conveyor belt)* because if patients are saying that we are really good and are appreciating our care at the minute why take it away. And I think it is very important but if they are suffering from... because most people we see are ill in some way... Technically... I think people need ..... people need people. Machines help but people need people. Because we kind of bounce off each other. And you learn from maybe the ones that aren't such a good experience so that you don't do it again.

Link to WT P4.

Vulnerability of pts not just looking 4 disease but helping a sick person.

RF: as anything apart from time that you think is a barrier to providing care?

Can't change this but need to make most of it.

RB: apart from time probably your space to work in. The set up the environment. The Department set up because I think the pathway could be a lot neater it's all got too big.

RF: is there anything else you'd like to bring into the discussions?

Imporance of recognising individuality.

RB: not really I think everyone handles differently so that's the only thing appreciating that everybody is different staff and patients. We are all human and we don't... Yes we might have a bad day but I think we still got to be seen as being professional and keeping that 100% level of care even if you are having a bad day. *(keep the show going)*

INTERVIEW TERMINATED.

Show must go on.

Rad is there for pt

- + pt comes 1st. I don't believe this is because they are told by documents but it is something that the belive in personally + naturally. They are being paid to "serve" but it is something the genuinly belive in see * P10 etc. + note about not just caring 4 but caring about.

Note: 7-12-17
Machines may seem alien to pt (see words used) but rads take the alien unknown away + this is recognised by both pt + staff.

October 18, 2017 12

4-12-17

Thinking of what was said. Get forgotten about in chaos. Yes pt needs to come 1st but knowing what happens to pt brings closure.

Expectation just get on with next pt but usually support network is not there @ night.

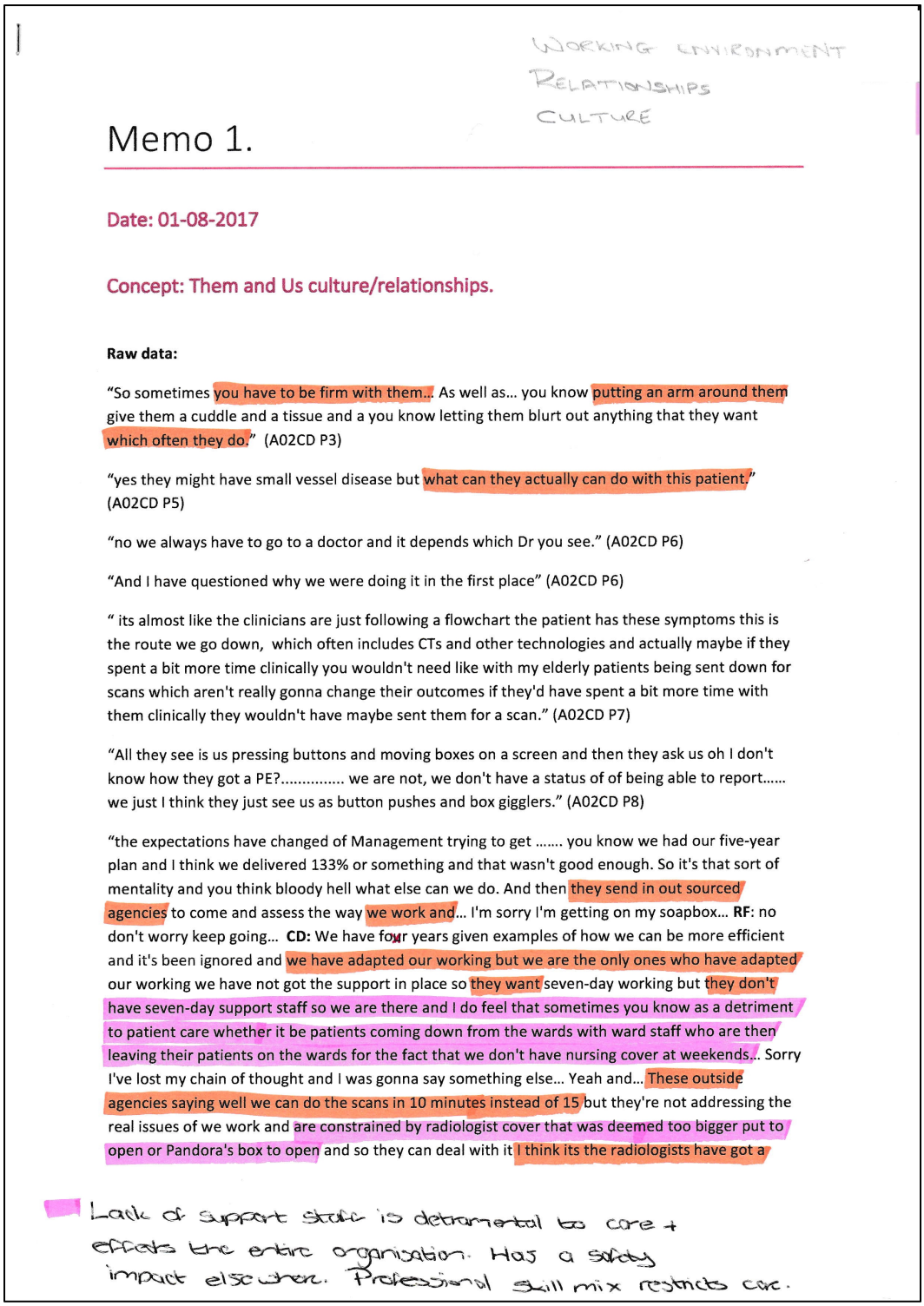
May be an opp to work ± A+E teams. Need to be part of team as a whole but as with pt relationship this needs to be a 2 way thing.

Can't complain that others don't understand when we don't understand them etc. IPL all well + good as a student but unless you know your own job how can you take onboard others. Its @ the wrong time. You need experience to then share exp ± other professions. After all if ward can't continue due to lack of support pt care will suffer!

7-12-17

Personal touch steps conveyer belt.

Appendix 14: Examples of the Working Memos



WORKING ENVIRONMENT
RELATIONSHIPS
CULTURE

Memo 1.

Date: 01-08-2017

Concept: Them and Us culture/relationships.

Raw data:

"So sometimes you have to be firm with them... As well as... you know putting an arm around them give them a cuddle and a tissue and a you know letting them blurt out anything that they want which often they do." (A02CD P3)

"yes they might have small vessel disease but what can they actually can do with this patient." (A02CD P5)

"no we always have to go to a doctor and it depends which Dr you see." (A02CD P6)

"And I have questioned why we were doing it in the first place" (A02CD P6)

" its almost like the clinicians are just following a flowchart the patient has these symptoms this is the route we go down, which often includes CTs and other technologies and actually maybe if they spent a bit more time clinically you wouldn't need like with my elderly patients being sent down for scans which aren't really gonna change their outcomes if they'd have spent a bit more time with them clinically they wouldn't have maybe sent them for a scan." (A02CD P7)

"All they see is us pressing buttons and moving boxes on a screen and then they ask us oh I don't know how they got a PE?..... we are not, we don't have a status of of being able to report..... we just I think they just see us as button pushes and box gigglers." (A02CD P8)

"the expectations have changed of Management trying to get ..... you know we had our five-year plan and I think we delivered 133% or something and that wasn't good enough. So it's that sort of mentality and you think bloody hell what else can we do. And then they send in out sourced agencies to come and assess the way we work and... I'm sorry I'm getting on my soapbox... **RF**: no don't worry keep going... **CD:** We have four years given examples of how we can be more efficient and it's been ignored and we have adapted our working but we are the only ones who have adapted our working we have not got the support in place so they want seven-day working but they don't have seven-day support staff so we are there and I do feel that sometimes you know as a detriment to patient care whether it be patients coming down from the wards with ward staff who are then leaving their patients on the wards for the fact that we don't have nursing cover at weekends... Sorry I've lost my chain of thought and I was gonna say something else... Yeah and... These outside agencies saying well we can do the scans in 10 minutes instead of 15 but they're not addressing the real issues of we work and are constrained by radiologist cover that was deemed too bigger put to open or Pandora's box to open and so they can deal with it I think its the radiologists have got a

Lack of support staff is detramental to care + effects the entire organisation. Has a safety impact elsewhere. Professional skill mix restricts care.

strong sort of their quite knitted together and they will stand strong.....whereas I think we all just buckle and we just give in." (A02CD P9-10)

"Because yeah..... they just won't cut the lists errmm we did have one list cut last week but that was because we had to go to clinical governance." (A02CD P10) *Coming across as lists only cut when it suits 'them'.*

"But you know they're looking at trying trying to improve increase our cardiac capacity which yeah it does need doing but.....? the way they're doing it they're trying to get more into a session so we are then having to work you know get through more and..... but really they need to create more sessions. So, it's us adapting our work and no one else. So, it's really frustrating we just seem to "oh yeah we'll do that, oh yeah we'll do that yeah." (A02CD P11)

Memo analysis:

The use of the words 'them' 'we' and 'us' is clearly demonstrating an apparent 'them' and 'us' culture within the working environment. This is not only between the radiographer and the department/trust management but, between radiographer and radiologist radiographer and clinician and radiographer and patient.

The use of the word 'we' shows that this participant is identifying and positioning themselves as part of the 'radiographer' group (team ethos) however there are also some underlying divides within that group particularly between this participant and the younger generation. This is discussed within memo? (~~Knowledge practice gap~~). Needs to be addressed/explored further by conducting interviews with newly qualified newly trained CT radiographers. Within the context of the 'them' and 'us' culture the aim will be to identify whether or not the newly qualified radiographers situate/identify themselves within subgroups of the radiographer group or in fact they place themselves within the radiology group or in fact trust wide group.

The radiographer participant also appears to be identifying the radiographer 'we' as being a weaker group in comparison to the management 'them' and the radiologist 'them'.

Attempts to make staff feel included regarding decision-making are not being followed through and this is adding to the negative relationship between radiographers and management.

Team ethos is however restricted by silo grouping not true system approach.

— 18-8-17 Rads contacting them + us. not working together.

Memo 41.

Date: 02-08-2017

Concept: Section that needs greater consideration.

Raw data:

I hope it doesn't get any worse I don't think it's that bad I think... but I think the new generation coming in are more technology minded may be? Err

RF: what you mean by that?

CD: dun know they're more like more happy just to sit and scan than being in the room and and maybe clean-up a patient you know you kind of notice patients you know that come down wet you know..... I couldn't I feel sorry for them but I couldn't send someone back because I know I'd be thinking that's awful.... so it's a bit selfish of me really because it sort of stopping me from feeling bad but I will go and get them I'll help them to get changed but you know not everybody does. I'm not saying perfect

RF: I don't think you should feel guilty for wanting to clean someone up.

CD: yeah I know.... I know.... but it's that whole yeah..... but I think because it's so fast now the way in which are expected to people just have one eye on the clock really. and sometimes you just need to have a step back..... and I sort of used to be very much like that but now I think actually in clinic they booked 10 people in one slot and they..... the patients very rarely wait what more than half an hour for a scan and I know it's bad that they waitedthat long but actually if it helps another patient and then when that patient is in they might need a bit of help you know it's not like we're sitting around drinking tea is it? But.... Yeah..... I think there is definitely a one eye on the clock and it is bigger orientated..... I don't know whether they measure quality I think they measured quantity and this was bought yeah..... this is been highlighted before we had I had a discussion about our cardiacs and other places do so many in session and I did say but what is there recall rate and they didn't know. and I mean there was talk that maybe we have a too higher standards and actually we could get away with being a little bit..... Less especially in terms of our cardiac cardiacs

RF: how does that make you feel being told that your standards are too high?

Link to memo 3.

Conflict through letting team down or patient. Feels guilty for letting team down if she performs compassionate care which takes extra time.

Expectation that need to do more

Rationalizing/Justifying waiting times.

Keeping some waiting to meet needs of 1.

The person in the room is the priority at that time.

Respecting individual

Patients are let down on words + doesn't want to be like that. But doesn't feel this is a universal thing.

Clock watching memo 43

Quality vs Quantity. memo 43

? Golden minute or just part of rationalising.

CD: well...I know ..... in some ways it's like yeah, they are there brilliant but then that is seen as a negative?

RF: that's quite insulting

CD: it is..... But you know they're looking at trying trying to improve increase our cardiac capacity which yeah it does need doing but.....? the way they're doing it they're trying to get more into a session so we are then having to work you know get through more and..... but really they need to create more sessions. So, it's us adapting our work and no one else. So, it's really frustrating we just seem to "oh yeah we'll do that, oh yeah we'll do that yeah"

RF: how you think the patient feels about being rushed through?

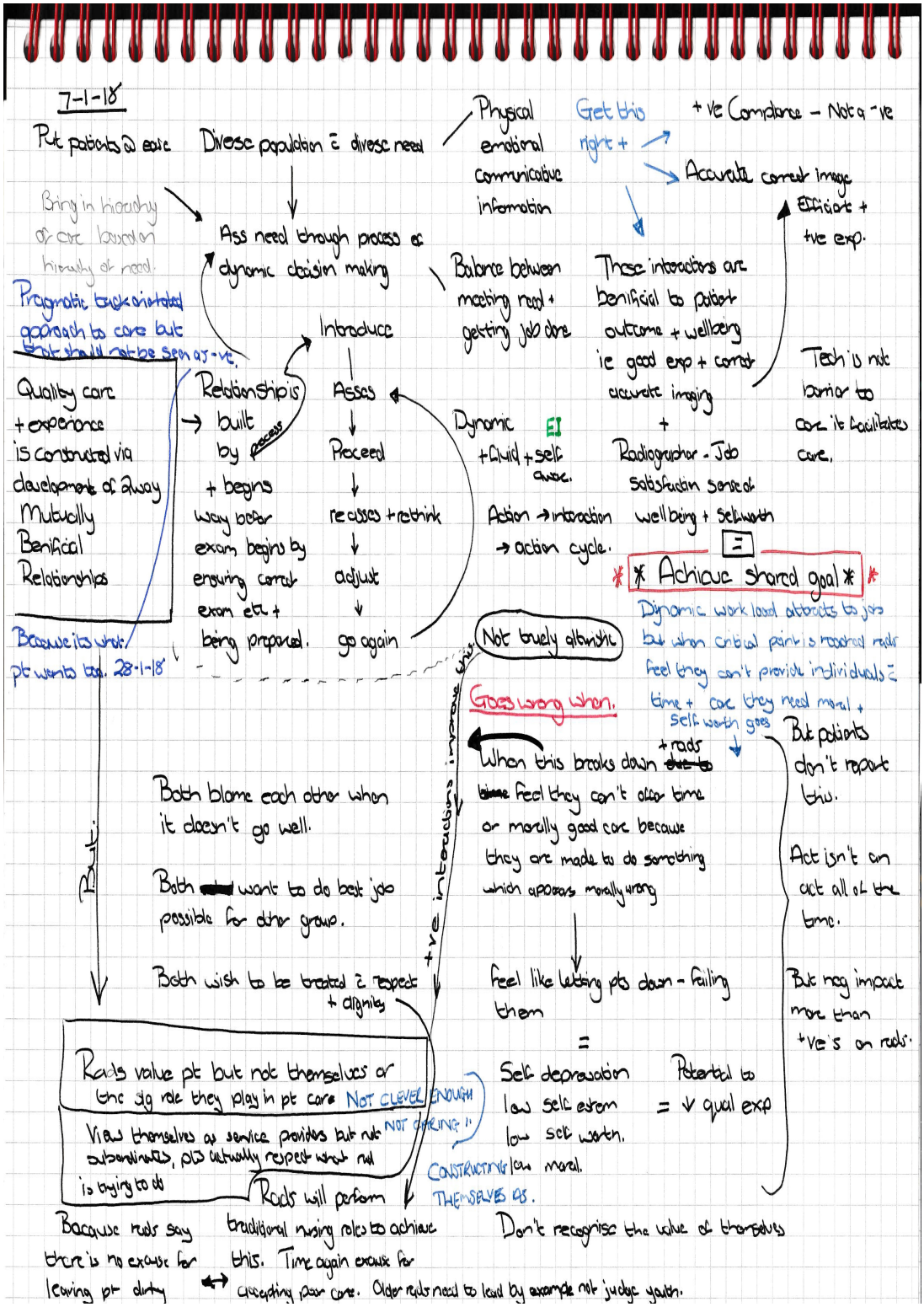
CD: I think..... It probably depends on how long they waited for the scan. If they've waited for some time and then they've building it up in the head and then it's their first attendance as well..... and then just to be rushed through they must just feel like 'oh' you know what I mean? That was just gone in a blink of an eye and actually if you are perceived to be rushing as a patient I would think have they got everything have they done everything, right? As well because if you're rushing that much or you're that distracted and you can't take those distractions you can't disguise those distractions the patient isn't going to feel at ease at all.

Memo analysis:

Although I although I have taken some elements out of this section I feel that there is a lot going on within what is being said and I feel this is going to take a lot more thinking about. What I don't want to do is bring my own thoughts and feelings into this section at this stage because it is something that worries me bothers me and frustrates me at work. I think I need to reread it several times try to pick out exactly what is going on here. I think this whole section maybe to significant just to skim through. And I am concerned that because it is at the end of an interview in the end the first stage of analysis I may not give it credit or interpretation that it needs.

Action to be taken: go through it a couple of days with a fresh head.

Appendix 15: Working Analytical Diagram



Appendix 16: Working Analytical Diagram- Category Development & Integration.

Appendix 17: SCoR Core values (The Society and College of Radiographers 2018c: 2-5).

Section 1: Service Delivery for Person-Centred Care

Core values

"During my imaging or therapy procedure I would like it if you could"...

1. **Introduce yourself and tell me your role in the management of my care:**

> *"Tell me your name using 'Hello my name is... and I am a ...' and then tell me your role and what you want with me today because we are then on an even footing"*
>
> *"The radiographer asked me what I would like to be called – it was a nice touch"*
>
> *"I might think you are a nurse or a doctor because the uniforms can be confusing. Please correct me so that I know you are a radiographer"*

2. **Treat me as an individual and explain the purpose of the procedure with specific reference to the management of my particular case:**

> *"I heard the radiographer referring to me as the "next chest" and it made me feel inhuman, I worried about how I would be treated in the x-ray room"*
>
> *"I had an MRI scan but nobody explained why. The radiographer appeared to act as though she was just obeying instructions, she did not come across as if she played a part in my clinical pathway. This made her seem like a technician rather than a professional."*
>
> *"I had a cannula put in my arm, but nobody explained why. I was in the tunnel but my query was ignored because she had her written instructions."*

3. **Find out what is important to me:**

> *"I would like you to find out what is important to me so that you can help me to make the best decisions for me. Listen to me and address my concerns then talk to me in a language I understand. Don't use jargon but please don't patronise me. Take time to adapt your communication if required"*

4. **Provide me with high quality patient information and check I am informed enough to consent to proceed:**

> *"[I] had lots of queries about breast screening when I got my first letter. I'd heard so many negative stories before I went and in fact it was a positive experience for me, with screening staff providing lots of info. Must say this would have been better **before** I arrived for the screening!"*
>
> *"Please don't assume I will not understand. Nobody told me that the CT used Ionising Radiation I would have like to have known"*

5. **Ensure that I understand your role and make me feel confident and safe in your care:**

> *"It may not matter to me that you are a radiographer rather than a nurse but I need to know that you are skilled at what you do, that the equipment you use is up to the job, and that I can have complete confidence and feel safe in your care. Show me that you know what you are doing and that I can trust you"*
>
> *"I was extremely apprehensive about the MRI scan fearing that I would not be able to cope with the very claustrophobic environment. The staff were amazing!!! At all times my dignity was respected guiding me through the whole process in a calming, caring and professional manner. Thank you very much" (CareOpinion.org.uk)*

6. **Consider my dignity and modesty:**

> *"I can feel disempowered when I have very little clothing on. I was laid on the bed obviously naked from the waist up, it felt really impersonal you know there was nobody having a chat with me at all, it was just all business and you just go with it because you want the best" (SuPPORT 4 All study)*
>
> *"Help us cope, help us to feel that we have some control" (SuPPORT 4 All Research study)*

7. **Keep me informed during my appointment and at each stage of my journey, including the reason for any changes or delays to my results:**

> *"I need to know that I have not been forgotten. I am likely to worry if I don't hear from you within the time frame I was told. If you have to re-arrange my appointment be honest with me and explain why, so that I feel valued"*
>
> *"Please don't send a recall letter to me when there is nobody for me to talk to, I was extremely worried"*

8. **Make yourself aware of all my relevant medical and personal information required to deliver the best care for me:**

> *"If you don't have some information that you feel you should have please take time to find it. Let me know what is happening and why. Don't risk making a wrong decision about my care to save time, please ask me. Take time to use the information available on the Patient Information System and to update this with relevant information about me as a person"*

9. **Be aware of my limitations but please do not make assumptions about me:**

> *"Be gentle with me if I am struggling to walk, talk, lie down or straighten my arm/leg. Please explain to me why you want me to do any of these things and try to help me if I tell you I can't do something. Work with me to come up with alternatives that I can try. Be patient with me. Consider alternative tests or positions. Adapt your technique. Don't continue regardless as this may result in an unsatisfactory outcome"*

10. **Make sure my care is individualised to my needs, build in time for genuine discussion about the options that are available and allow for shared decision-making. I want to be involved, there should be no decision about me without me:**

> *"I would like you to explain who has asked for me to have this test/treatment and why it is important for me specifically. I need time to ensure I agree with the plan for my care and it would help if you can check with me that nothing has changed since I last saw anyone for this episode of my care. Confirm that I know why I am here and allow me to choose anything I can related to my test, for example which arm you put the needle in if possible"*
>
> *"I was given a CT scan because the wait for MRI was too long. The MRI was follow-up and no one spoke to me at any stage to explain why or ask me whether I would prefer to wait for the MRI rather than have a CT"*

11. **Take into consideration my family member and/or carer who may be with me. They may have my best interests at heart or conversely their actions may remove my control:**

> *"Please ask who has come with me today and ask what their relationship with me is. Talk to us both and give my family member/carer the chance to ask questions. Explain to us both about how I will receive my results, this will help us to remember the information. Ensure that anyone with me can come and help me to undress and dress if required. Allow them to stay with me during any preliminary tests* ***if I want them to*** *(even if I'm an adult) and if it is safe for them to do so"*
>
> *"Consider allowing me to record the consultation if my family member/carer is unable to stay with me"*

12. **Let me know what happens next, timescales and people to contact if needed:**

> *"I need to feel assured that when I leave I am not forgotten and that I am well-informed about what will happen next"*

13. **Be honest and transparent about any findings:**

> *"Do not hide behind your job. I don't want you to divulge anything that is not going to help me or that you are not qualified to but if you know the answer to a question don't be vague in your reply as it is likely to make me worry more. Tell me who will be able to give me the information I need and when"*
>
> *"I'd got questions which were way off his understanding scale you know about what bra can I wear, and you know does it matter if it's underwired and that sort of thing, he'd just no idea…I did get some answers as time went on but when you are starting you want to know then" (SuPPORT 4 All study)*
>
> *"I'd prefer to get a copy of the radiology report as well as getting a filtered version from my GP"*

14. **Be honest with me when things go wrong:**

> *"Talk to me and my family and give us time to ask questions and have our concerns addressed. Don't try to hide what happened. Find time to talk to me about it"*

15. **Consider patient centred approaches to booking and appointment systems:**

> *"I have a life outside of being a patient so let me decide which is the most important to me. Help me to achieve this balance"*
>
> *"Be mindful of the impact a changed appointment might have on me"*
>
> *"I went to the radiology dept. for an MRI on May 28th and was told the scanner was broken. I asked when it had broken down and was told the night before. No one had bothered to phone me until 12.00 noon the next day when I had just arrived in your parking lot for my appointment so I made an un-necessary journey. I could understand if it had only just happened" (CareOpinion.org.uk)*

Appendix 18:

Knowledge Tables

Agrees with existing knowledge	Contests existing knowledge	New knowledge
	My first presumption that an even wider cavern may exist between the care that patients want and need during a CT examination, and what radiographers believe is the care a patient requires in order to produce the best diagnostic images possible proved to be miss placed.	The model of care within the CT clinical environment is a co- constructed model of care whereby the experience of care as delivered by the radiographers is meeting with the expectations of the patient. The study addresses Bliekers et al's (2016) work by beginning to create an understanding of compassionate care as applicable to the technical CT clinical environment. To help with a practice and education framework supported by evidence. Shared goal of producing accurate diagnostic images to answer clinical questions.
Research must move away from demonising the relationship between technology and care. Attention should instead move towards conceptualising technology focussing on the human interaction with technology and the values and meanings which individuals and groups in different contexts attribute to the technology (Barnard and Sandelowski 2001). Not the technology per-se which affects the relationship between human and machine, but the context and the way in which the technology is used which holds more significance. (Barnard and Sandelowski 2001). There is a clear "philosophical distinction between the operation and design of technology and the human experience within the environments that they inhabit" (Barnard 2002)		Of most significance during patient- radiographer - technology interaction is that the quality of care provided from the patient perspective is influenced by the perceived confidence and competence of the radiographer.

Agrees with existing knowledge	Contests existing knowledge	New knowledge
The role of the radiographer in providing support and guidance to the patient as part of a holistic patient focused experience is reported within existing literature (Andersson et al. 2008; Munn et al. 2014; Lundvall et al. 2015). The significance of the communications skills needed to manage such encounters and situations are in practice taken for granted and their value to the success of an examination may be underestimated by those working outside of the clinical imaging environment (Reeves and Decker 2012).	The execution of technical procedures in the context of CT scanning are a fundamental part of patient care not something that is done alongside patient care as identified by Ahonen (2008).	This co-constructed model of care encompasses the simultaneous assessment of patient needs against the technical requirements of the examination. Care within CT is therefore a technological yet patient centred model of care Technology is a pathway of care giving and should be embraced as so, not apologised for or hidden behind.
	Judging patients based on first impressions should not be classed as being poor quality care provision.	Making a judgement of need based on first impressions should not be viewed negative. It should be valued as a skill deployed to achieve an appropriate care experience within the context of the specific healthcare environment. Radiographers do not ‘judge’ the patient per-se. Instead I would argue that in practice radiographers perform a dynamic evaluation of the patient based on their initial interaction and then adjust their behavior and further interactions accordingly. The significance of the speed of decisions making does not appear to be recognised within the literature and is instead dismissed as rushing and non-patient centred (Mathers et al. 2011; Hayre et al. 2016)

Agrees with existing knowledge	Contests existing knowledge	New knowledge
Whilst the time to build a trusting relationship between the patient and nurse may be short, it is made achievable by the one to one nature of the interaction (Lundén et al. 2012).	The time required to build a respectful relationship with each patient was a luxury not afforded to modern radiography departments (Mathers et al. 2013).	Data disclosed by radiographer participants, contests these assumptions. Instead identifying that CT radiographers relish the challenge of building a successful relationship and having a positive impact on the patient's life, all within a relatively short, solitary interaction. A skill which is not only interpreted as essential to the provision of care within CT but is also constructed as an enjoyable and rewarding element of the job. This in turn is contributing to the generation of a positive working environment which is in line with NHS constitution and legislative documentation expectations presented in Chapter 3. The dynamic speed at which needs are actually assessed and acted upon is more significant than the time frame of the interaction. It is the way in which the interactions occur, no matter how fleeting they are, which actually signifies how patient focused the overall examination becomes not the length of time spent with each patient. The establishment of trusting relationships is not absent but different and contextually specific. This is validate by the nursing literature (Lundén et al. 2012) and supports a clear argument to suggest that radiographers are in fact working in line with the practice expectations

Agrees with existing knowledge	Contests existing knowledge	New knowledge
In keeping with the interpretations of Lundvall et al (2014) the model is validated by the radiographers as being a cognitive problem solving process which draws upon taught elements of knowledge such as scanning techniques, fused with learnt holistic skills which are developed through exposure to varied and challenging situations (Tronto 2015: 7 & 30) as the radiographers career progresses.		Whilst this guidance (HCPC 2013)recognises these skills (problem solving) as being essential in the identification of a proficient radiographer (HCPC 2013), more emphasis needs to be placed on their significance in providing patient centred care whilst being an attribute needed to achieve a task
Previous work has reported that radiographers find it difficult to show empathy towards patients to whom they feel are less deserving (Strudwick 2016). Unfortunately, this is not limited to the Strudwick study and was mirrored by data provided by radiographers within this study.		Evidence supplied by radiographer 8 highlights the significance of a mutually respectful interaction during a radiological examination and how the attitude of the patient is significant to the construction of care provided by this particular radiographer. When the patient loses respect for radiographer and/or the service the relationship and level of care provided has the potential to break down.
Radiographers disclose a fierce interest in their patient's wellbeing. (Munn et al 2014)		I would argue that a patient will not tolerate pain and discomfort unless they value the examination as having a significant purpose.